GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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"THE FOOD given all larvæ for the first 48 hours of their existence is the same," Bro. Doolittle gives, p. 479, as the belief of the majority of our best bee-keepers. I think that's the first time I've ever seen it set at less than three days, the time set by scientists.

THAT LONG-FELT WANT in smokers, a nozzle that would never tumble off, nor get with age so it wouldn't go on, seems at last filled by the new nozzle-cover being sent out from Medina. It's a lot of comfort to be freed from the time-wasting annoyance of the old nozzles, and the new one promises to have staying qualities.

PHACELIA, which has now been in bloom in the window for some time, has a blue flower resembling the heliotrope, equaling it in beauty, strongly fragrant, although I don't think it has the same fragrance when grown as an open-air plant. It is wonderfully lasting as a cut flower, rivaling the carnation in that regard.

I'VE BEEN TRYING the corrugated bread-knife for cutting foundation, miter-box fashion. It works finely, and I seemed to be working faster than the old way. But when I timed myself I was surprised to find that I could work 50 per cent faster the old way with a pocket-knife and rules. But I've had much practice the old way.

WHEN YOU CLIP a queen, and try to let her run off your fingers on to the comb, she will generally persist in running up on your hand. Take a leaf or other small object, let her run up on that, then lay leaf and all on the top-bars. [Yes, she will persist in running up on your hand unless you can get her nose directly against the comb or bees.—ED.]

"I NEVER saw more white clover in the fields than now," says the editor. Same here; but the first days of June have been so cold and wet that bees could have only about a day in a week to work. [The same here. Notwithstanding such an abundance of clover, the bees do not seem to be working on it quite so heavily as when there has been less of it. But did you ever see so much *sweet* clover? The dry weather during the early part of May seems to have been just the thing to give it a boom. Last year sweet clover did not amount to very much because of the excessive amount of rain.—ED.]

THE DANGER of spreading foul brood by means of extracting combs is not light. I learn from *American Bee Journal* that Prof. Harrison advises disinfecting such combs with formalin. The expense is trifling. He says: "The combs of from 200 to 300 colonies could be disinfected at an annual outlay of about 20 cents." Think of it! 10 or 15 sets of combs insured for a cent! [This is a good point; and this fall, when we get a lot of empty combs, I am determined they shall be put through the fumigating-box. It would be well, perhaps, for all careful bee-keepers to fumigate their combs, to be on the safe side—that is, if the formalin treatment is effective in killing spores as well as the actual bacilli.—ED.]

THAT STATEMENT of the editor, page 480, that at the Los Angeles convention we can get a room at 25 cents a night, and best board at 25 cents, made me stop to think whether he could mean it, as there came up before me other national conventions where room (or, rather, bed) cost a dollar a night, and the bed — well, I think I'd just as soon sleep at home. [I am not sure that meals at 25 cts., and rooms at 25 cts., could be engaged at as high a grade of hotel during the week of the encampment of the G. A. R. at San Francisco. Los Angeles is about 450 miles from San Francisco. A large amount of railroad traffic will go through that city. Many people will stop there, with the possible result that rates will be advanced. But two years ago this

June I secured the rates above mentioned at the Natick House, a commercial hotel where some of the best traveling men stop. It was a fine new building, with nice clean rooms on the European plan. You could engage your room, and get your meals at the restaurant if you happened to be at the hotel; but if you did not, you did not have to pay for something that you did not get. Board and lodging are much cheaper in Los Angeles, considering quality, than almost any other city of its size and importance in the United State. California is a food-producing State, and every thing in the line of food stuffs, especially fruits, is cheap, even if some other things are high.—ED.]

W. L. COGGSHALL, p. 485, doesn't agree with me that for rapid work a spaced frame is better, and then throws the Hoffman frame at me. Brother Coggshall, I wouldn't have thought that of you! The Hoffman frame works here just as it does with you, and I would rather have an unspaced frame; but a frame spaced with nails or staples is another story altogether. By the way, W. L., your frame is a good bit like mine, only I've gone still further than you, and there's more of mine.

THE JUMBO SMOKER seems a little heavy; but for steady work it's a nice thing to have a fire-pot that holds more than a quart, so you can dump a good section of the chip-yard into it. When fairly started and fully loaded you can let it stand for hours with no fear of its going out. Then it has such a big base that you can leave it standing in the wagon when you drive from one apiary to another, and go right on without relighting when you reach the other apiary. I like it much. [I have come to the conclusion that the ordinary standard size of smoker, 3¼ or 3½ inches in size, is too small for a large apiary. A 4-inch barrel is none too large for the professional who keeps bees for the bread and butter he can get out of them.—ED.]

THE APIARIST should heed the teaching of nature, and not violate the rule by putting an empty super under a partly filled one, says Hershiser, page 492. You're a pretty one, Bro. H., to talk about violating rules. Isn't it a gross violation of rules to work in sections at all? The rule is to work down, not up. Did you ever know bees in a state of nature to make a fresh start and begin building four or five inches higher up in a new place? And when an empty super is put under a partly filled one, isn't the "food and brood in as compact a space as" when the bees begin work in an empty super put on top? Just stop and think a minute. Isn't there just as much vacant space between the top of the upper super and the brood-nest in one case as there is in the other? By practicing the orthodox method you say the work will be distributed in undesirable proportion. When the bees are working in two supers, isn't the work distributed just as much whether the upper or lower super is the fuller? [What Mr. Hershiser doubtless referred to was that bees will not create a great space between the brood-nest and surplus. As you truthfully say, they build their first attachments of comb to the top of the log or box hive, and then work downward? The upper portion is filled with honey, and the lower part with brood. In the ordinary plan of tiering up, or, rather, tiering *under*, we create a big vacuum, so to speak, between the brood and the *already partially* stored honey. Now, then, do we ever in nature find a condition like this? When an *empty* super is put on top, no work has begun, and there is no vacuum to bridge over. The bees complete the work below, then go above.—ED.]

SAY, ERNEST, I wish you'd interview Leslie Alexander, p. 487, and see if you and he can't come to some kind of a compromise about those 45 colonies averaging 70,000 bees. [Is it not barely possible that Mr. Alexander meant exactly what he said? Mr. Phillips tells me that we in America do not know what *strong* colonies are. If you will look over some of the illustrations in this issue, you will see that many of the Jamaican hives are two and three stories high. Years ago, when we used to buy swarms of the farmers, paying for them so much a pound, we secured quite a number that weighed between 9 and 10 lbs. Considering that there are on an average 5000 in a pound, we have 50,000 bees, and these swarms came from one-story hives, Simplicity ten-frame. Now, is it hard to suppose that a three-story hive, run for extracting, might average 70,000 bees? A tropical climate is more favorable to the use of large colonies than one like ours. The nearer we get to the equator, the larger the colonies, as a rule.—ED.]

PUTTING additional supers always on top, and never having more than two supers on at any one time, will most certainly result in hurrying up the sealing and getting sections packed full; and if you want something for a show, sections sealed out clear to the wood, without regard to cost, that's the way to work. It will give a larger total of fancy sections, but I think I can get a larger total of *money* out of a whole apiary by giving all the earlier supers on top, and adding supers just as fast as the bees fill them. Have your sections all finished next the brood-chamber, and the work will be sooner done, and you will also have more tendency to swarming, and in most cases a little more tendency to dark cappings than when the sealing is done further from the brood-nest. I've had colonies working in five or six supers at a time, filling them with bees; and if I had tried to crowd them into two supers there would have been a loss. [Either you do not say what you mean or I do not undestand you. You say, "I think I can get a larger total of *money* out of a whole apiary by giving all the *earlier supers on top*." Italics mine. That is Hershiser's plan. Don't you mean, putting the "earlier supers" *under* those part-

ly drawn out? At all events, that seems to dovetail better with your argument later on. Now, it is possible that you are right—that you can get more actual money by creating a vacuum between the brood and honey than you can by Hershiser's plan of keeping brood and honey together all the time. This is a "nice point," as the lawyers would say, and I should like to hear from our practical comb-honey producers. To produce comb honey for exhibition purposes is one thing; to produce comb honey for the purpose of getting the most money is another proposition entirely.—ED.]

A French journal says a good filler for furniture made of mahogany or other dark-colored wood can be made by melting together 500 parts of beeswax and 125 parts of resin, and adding 125 parts of Indian red. It is very useful in plugging up holes or splits in furniture made of such woods.

"I love to steal awhile away" has been sung to another tune at the instance of General Manager France. The *American Bee Journal* says: "Mr. France reports having caught three persons guilty of stealing from an apiary of one of the members of the National, on May 16. They were given to the 25th to settle, or take results of the enforcement of the law. Two of the three, before the day was gone, came and settled, and it was thought the third would do so very soon." But there still remains the disagreeable feeling of being considered a thief in the eyes of the community.

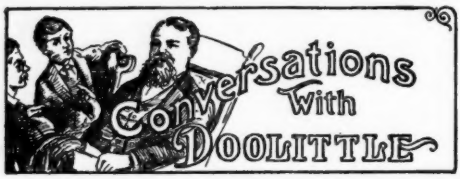
A French journal, devoted to the interests of bakers, says, "In a little valley bordering on the Rhine the cutting of agates furnishes employment for a number of persons. Before cutting these stones they are soaked in honey for eight hours, and then in sulphuric acid for three hours. This operation gives to the stones a beautiful cloudy appearance which is greatly admired in the finished product. The grape sugar contained in the honey, by its combustion in the sulphuric acid, produces this discoloration. Every agate-cutter uses every year about 100 lbs. of honey in his workshop.

An exchange says a shipment of 600 barrels of honey recently left Mexico for New York. Last year Rambler showed that these large quantities of honey are designed for European markets, and simply touch at New York on the way. It hardly seems likely that so large an amount would be thrown on that one market, even as large a city as New York is, without our New York correspondents reporting it. But there is no disguising the fact that our neighboring republic on the south presents a vast field for the bee-keeper, and that it is being fast developed for that purpose. The correspondence at this office alone shows that.

The editor of the *American Bee Journal* gives us the following useful hints which every writer for bee-journals should observe. I've been wanting to say the same thing for a good while; but I rather dislike to tell folks what seems to be self-evident. The editor says, "The correct use of bee terms, at least a few of them, is a matter of more or less perplexity to those not familiar with them. An egg in a cell hatches out into a *larva*. *Larva* is the singular, *larvæ* the plural; one *larva*, two or more *larvæ*. *Larval* is the adjective; as, 'bees in the *larval* state;' *Nucleus* is the singular, *nuclei* the plural; one *nucleus*, two or more *nuclei*. When used as an adjective, *nucleus* is the word—*nucleus* plan, not *nuclei* plan of increase, no matter if a hundred nuclei are used." Some of our most experienced writers puzzle us at times by using *nuclei* and *nucleus* interchangeably.

A correspondent of the *American Bee Journal* says "the question whether bees are beneficial to orchards is somewhat problematical. Bee-men, who are quite accurate observers, are positive about it, and are, of course, in favor of the bees' usefulness to horticulture. Fruit-growers, on the other hand, often claim to find crops just as good, or even better, without the aid of the bees." Some years ago it was claimed by some that vegetable life is sometimes spontaneous. To prove it a certain culture of boiled stuff was put into a bottle which was then hermetically sealed. In a few days, sure enough, the culture teemed with life But that proved nothing more than that the boiling did not eliminate the first germs of life or else the bottle was not so closely sealed as to exclude germs. So with orchards. Considering the universality of the bee, what fruit-man can say that none have been in his orchards? Or if he knows there have been none, how can he prove that his crop would not have been larger if bees had been busy on the blossoms? If design in nature is evident anywhere, it is in the adaptation of the bee to the work of pollination. But that other insects may assist in that work is not denied. But what are they? and what reliance can be placed on them as can be on the bees? The writer in question shows very nicely how the blossom attracts the bee, and how the bee in turn scatters the germs of life from blossom to blossom. The experiment

has been tried in many instances, always terminating in a good showing for the bees; and any orchardist who would object to bees on his trees during the time of blossoming seems hardly capable of correct reasoning.



PREVENTION OF AFTER-SWARMS.

"Say, Doolittle, can you tell me how to prevent after-swarms?"

"Well, I might tell you how I manage in this matter."

"I wish you would do this; and, besides, I wish you to go into the minutiæ of the matter, so that a 'wayfaring man, though a fool, need not err therein.' Last year I thought I could stop such swarms; but I failed, so I came over this morning to see if you could tell me just how to do it."

"After trying all the plans to prevent after-swarms given to the public I settled down on two plans as the cream of the whole, and will give them to you."

"But have you tried them yourself? I don't want any of the cream from the plans I tried last year, for I tell you they will not work, cream or no cream."

"The plans I shall give you are such as I have used with success for years, and I judge that what I use with success others can."

"Well, probably; but all may not be as used to such things as you."

"The only way I become used to a thing is by putting in practice what I read, hear, and see. Can't you do that?"

"Yes, I suppose so. I'll try, any way."

"The two plans are used in accord with what I wish to do with the parent colony. The one I will tell you about first is used where the old hive is to be carried to a new stand, while the swarm is in the air, on the principle of using the new swarm for the main dependence for comb honey, hiving the same on the old stand."

"Do you generally work in that way?"

"Yes, I prefer hiving the swarm on the old stand where natural swarming is allowed, and then placing the sections which are on the parent colony on the new swarm, as this gives the swarm the most of the working force. By thus doing, the bees do not stop work in the sections, and a good crop of section honey is secured."

"Glad to hear that. But excuse me for interrupting."

"To accomplish what I desire, I proceed as follows: As soon as the swarm is seen issuing from any hive I go to the shop, where I get a light box made for the purpose of carrying combs, which has previously been prepared, having the desired number of frames in it, taking it to the hive from which the swarm came, when the frames are set out of the box near the hive. I now take off the super and take out the frames of brood, putting them into the box. If the combs of brood seem to be well covered with bees, and the weather is warm, I shake a part of them off in front of the hive before putting the combs into the box."

"What do you do that for?"

"So as to get just as many bees with the swarm as possible, that a good yield of honey may be obtained from them, and also that as few bees may go with the combs as is consistent with the preservation of the brood, so that after-swarming will be prevented. If there are few bees on these combs of brood, or the weather is cool, I put all into the box, setting the box in the shade, and a rod or so from the hive, as soon as all of the frames of brood and bees on them are in the box."

"What do you set them a rod away for?"

"So that the returning bees will not go on these combs, as they will sometimes do where the queen has her wing clipped, and the swarm is hived on the returning plan. After the box is set away the frames brought from the shop are put in the hive and properly arranged, by which time the swarm will be likely to return if the queen has a clipped wing. If she was not clipped, then the swarm is hived in this prepared hive on the old stand, the same as any swarm is hived."

"What do you do with the combs and bees that are in the box?"

"An empty hive is placed where I wish a colony to stand, and these combs of bees and brood are placed in it, and the entrance adjusted to suit their wants, when they are left till the next morning. By this time nearly all the old or field bees have gone back to the old location, so that the young bees which remain are ready to accept any thing in the shape of a queen. They are now given a ripe queen-cell, a young virgin queen, or a laying one, just in accord as I have made preparations for them."

"Do you keep queens or cells on hand for swarming time?"

"Yes. I always prepare for any emergency by starting queen-cells a little before the swarming season; and when these are ripe a few nuclei are formed, and if more queens are about to emerge from their cells than I have nuclei for, the cells are put in cages provided with food for them, which are placed where the heat from any colony will keep them warm, and in this way they are preserved till I use them, or they become too old to be of use."

"I had not thought of keeping queens on hand to give to the old colonies having cast a swarm, but I now see it would be a good thing; and see how after-swarming can be prevented by this plan. But what about the second plan?"

"The other plan which I use is fully as successful as the one just given, but is used where I wish to treat swarms the way they are generally treated by hiving them on a new stand, in which case I proceed as follows: As soon as the swarm is hived I go to the old hive from which it came, and mark on it with a pencil, 'Sw'd, 6-10.'"

"What do you do that for? That is all Greek to me."

"This is to tell me at a glance that a swarm came from that hive June 10, should that be the date on which the swarm issued, and the one which was marked on the hive. If it should be on another day the date would be different; but the plan is the same, and suited to any day on which any first swarm is cast, or comes off."

"Yes. But what do you put it on there for?"

"Wait. On the evening of the eighth day from the date on the hive I listen a moment at the side of this old hive; and if swarming has been according to rule I hear the young queen piping, when I know a young queen has emerged from her cell, and an after-swarm will be the result if not stopped."

"What do you mean by piping?"

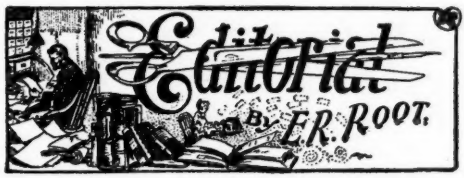
"This is a noise made by the young queen when an after-swarm is likely to issue, and sounds something like this: T-e-e-e-e, t-e-e-e, t-e-e, t-e, te. After you have once heard it you will never be mistaken as to what it is, for there is no other sound made by bees that resembles it in the least. If no piping is heard I do not listen again till the evening of the 13th day."

"Why do you not listen the next day?"

"Because the next rule is, that the colony swarmed when there was only an egg or small larva in the queen-cell, instead of the cell being sealed, as is generally the case, which allows the queen to emerge from her cell from the twelfth to sixteenth day after the first swarm. If no piping is heard by the evening of the seventeenth day, no swarm need be expected. But in nine cases out of ten, where after-swarming is to be done the piping will be heard on the eighth day after the first swarm is cast, so that this listening is no tedious job, for not more than a moment is generally required at any hive."

"When it is heard, what then?"

"When it is heard I go early the next morning and take every frame out of the hive, shaking the bees off from each in front of the entrance as I take them out, and return them again, so that I may be sure not to miss a queen-cell, but cut all off; for I know there is a queen at liberty, from the piping which has been heard. With all the queen-cells out of the hive there can be no more queens to come out, and thus all after-swarming is prevented. In these two plans we have something sure for accomplishing what we desire, under all circumstances which may arise."



THIS is a peculiar June. We hear of drouths and destructive floods, of hot weather and cool. Now, June 11, it is cool and misty. Our bees are doing little more than to keep up brood-rearing.

ABDOMENLESS BEES; AN INTERESTING CASE OF POISONING DURING FRUIT-BLOOM AROUND MEDINA.

ABOUT the first of May, when spraying was being carried on by some of our neighbors, I noticed hundreds and hundreds of our bees, which had lost their abdomens, dropping down on the sidewalks, or on bare spots of ground. In fact, such bees were scattered all over everywhere, but they showed up more plainly, of course, on the sidewalks. These wriggling creatures, without their hinder parts, crawling round, keeling over and over, were, of course, very much out of balance. They appeared greatly distressed. They would rush around in circles, or tug with their hind legs at their abdomens as if there were some pain or distress in that portion of their bodies. I was nonplused. I watched the bees flying overhead, and noticed the fact that they were coming from the fruit-bloom, and I began to surmise that the trees off in that direction had been sprayed with poisonous mixtures, and that the trunkless victims on the sidewalk had come from them direct. After watching in the air for some time I saw a bee suddenly drop down, without its abdomen, and strike the sidewalk with a bound and a whirl. I looked up again, and finally saw a bee flying toward me suddenly drop, whirling over and over, and land on its back, without its abdomen. That this bee had been flying was very plain. When I first saw it, it was rolling over and over in the air. From some cause or other it had lost its abdomen while on the wing; and at the precise moment of losing it, it went keeling heels over head until it landed at my feet. I then called the attention of our apiarist to the matter, and we both got down on our hands and knees and watched. Finally I saw a bee tug away at its hind quarters until it actually, by the power of its hind legs, tore its abdomen asunder at one of the segments or rings. But in this case the separation took place, not at the waist, but midway along the abdomen. A further search showed that other bees were tugging away at their bodies, and had torn them loose in the manner described. My theory was, the bees that had just come from the field were suffering from poison, and that, while on the wing, they would tug away at their bodies

with their legs, and finally effect the separation of the parts. We picked up a number of the victims with and without the abdomen, all of them apparently suffering. These were sent to Prof. Frank Benton, Apicultural Expert at the United States Department of Agriculture, Washington. May 5 he wrote as follows:

The A. I. Root Co.:—I have received yours of May 2, with accompanying cages containing diseased bees, and have made several microscopic slides from the juices of the body, from the honey-sacs, and the bowel contents, but find nothing abnormal. I am quite unable to account for the peculiar actions of these bees, and the remarkable fact that the abdomen breaks in two in the manner you describe and as is shown in the specimens sent. I have asked Dr Wiley to examine them for arsenic, and hope, if they have been poisoned by spraying he will be able to determine it.

Washington, D. C., May 5. FRANK BENTON.

Supposing, of course, that another letter would follow, we waited till May 27, when he wrote, inclosing a letter from Dr. Wiley, under date of May 18:

The A. I. Root Co.:—I take pleasure in inclosing herewith the report of the chemist who examined the bees sent by you under date of May 2, which you suspected had been poisoned by taking juice sprayed on fruit-trees. FRANK BENTON.

Washington, D. C., May 27.

The letter the doctor wrote to Prof. Benton is as follows:

Mr. Frank Benton:—We have made an examination of the two samples of bees forwarded to us under date of May 5 and 11, and find that arsenic is not present in either sample, while small amounts of copper are present in both. Is it not possible, perhaps, that the bees were poisoned from Bordeaux mixture, and not from an arsenical insecticide? You make the following remarks in your letter of May 11: 'If it is possible to find any traces of arsenic in the abdominal cavity of these bees, it would go a long way to settle the point whether the spraying of fruit-trees does result in the death of honey-bees." In connection with this we beg to state that we examined some bees last year that were said to have been poisoned by spraying the trees with Paris green. Arsenic and copper were both found. H. W. WILEY.

Washington, D. C., May 18.

The letter of Dr. Wiley apparently unlocks the mystery of the whole situation. You will note that, while he does not discover arsenic, he does find that the bees were poisoned with small amounts of copper. Blue vitriol, the main ingredient of the Bordeaux mixture, or, as the chemists say, copper sulphate, is used now very largely for spraying. Indeed, A. I. R. says that the Bordeaux mixture is used more commonly than the mixtures of Paris green. Our neighbors were probably using the blue-vitriol solution, with the result that our bees were poisoned. It occasioned so great pain that the victims were actually dismembering themselves on the wing and on the ground, killing them by the thousands. I would not have deemed it possible that a bee could literally tear itself to pieces, as we might say, in the manner I actually saw on the sidewalk.

I now recall that every spring during the spraying season I have seen bees by the thousands lying scattered over our sidewalks, with their abdomens off. Supposing this was the work of birds or insects, or that the bees had been stepped on by some of the numerous children playing on the sidewalk in question, I gave very little heed to the matter. It is doubtless true that others of our subscribers have noticed the same thing in the region of fruit-trees; and if they have, I hope they will hold up their hands. Let us ascertain how general this kind of poisoning has been. It seems to me the fact that Dr. Wiley, the Chief Chemist, *found poison at all* in the bowel-sacs of the bees, *is the best kind of proof* that the bees were suffering from blue vitriol.

You might suppose that, in our neighborhood, our farmer friends would spray only before and after blooming-time; but so many of them have the idea that A. I. Root scattered sweet clover and dandelion all over this vicinity, it is doubtful whether they would heed any suggestions along the line of saving our bees. Yes, some farmers are not aware that sweet clover is scattered all over the United States, by the dirt roads and railways; that it is a plant of comparatively recent introduction; and that the dandelion which grows so thriftily in and about Medina does so because our bees thoroughly pollinate every flower, with the result that the seed matures and germinates readily when it falls to the ground.

"THE PLEASURES AND PENALTIES OF AUTOMOBILING."

IN the May issue of the *Bee-keepers' Review*, Mr. Hutchinson refers to a ride he had with me on some of the common roads near Medina in my "auto." He gives a very fair statement of his experience, especially of the "penalties," one of the worst of which was the annoyance in the frequent meeting and passing of frightened teams, and that there had to be stops, sometimes, to let a fractious horse by. Medina is a country town, and automobiling is somewhat of an innovation in the vicinity. It was to be expected that something so novel in the shape of a "red devil" running up and down the streets would frighten the steady old farm horses, especially when out alone; for it is a well-known fact that a horse in a city, or where there are many horses together, will pay but little attention to a novelty. But I am glad to say that those in and around Medina are becoming more and more accustomed to my vehicle, and it is very seldom that I have to stop my machine now.

I have seen the day when a bicycle would scare a horse far more than an automobile. What could be more frightful to a horse than to see a man or devil strung up in the air, as it were, kicking, and coming toward him at a rapid pace? but now it would be hard to find one that is afraid of a bicycle; and yet how distinctly I remember that day when I had to get off and hide my machine in the grass every time I encountered a farm horse! The automobile has somewhat the appearance of a buggy, except that it is horseless. So far as it looks like an ordinary conveyance it is less strange to the passing horse.

Well, when Mr. Hutchinson was with me I was learning some of the eccentricities of

the new vehicle, and some of the "penalties" seemed to stand out more prominently then than they do now. The steering-lever worried me not a little. I would steer too much, with the result that the carriage would sway right and left. Now the steering is automatic, just as it is in the case of the bicycle. All the sensation is that the vehicle keeps the road, without any worry or strain on my mental gear. Another thing that bothered me was the control of the power. Sometimes the engine would get to "racing;" then it would hum like a thrashing-machine, and the carriage would go pounding over the roads with fearful jolts every now and then. Now the question of engine control is likewise automatic. When I desire to stop suddenly, the machine slows down rapidly, without any mental calculation on my part. At first I would get "rattled." I did the wrong thing at the wrong time.

Yesterday I had the pleasure of riding after my father's driving, in a brand-new machine, the Olds. It was somewhat amusing to see him go through the same awkward moves I did, of steering too much, of giving the engine too much speed, of doing the wrong thing at the wrong time. But it was not long before he made himself a part of the machine in that it would respond to his every wish.

The penalties are fast disappearing; and the *pleasures* — well, I do not know of any more glorious fun for me. Sometimes I ride away up into the night; and the thought that there is no horse to tire, and that it is simply a question of consumption of gasoline at the rate of half a cent a mile, and a little lubricating oil, is comforting indeed. On a hot day there is no tired, sweaty horse to call out one's sympathy. A mere pressure of the button gives absolute control of the speed and power, and one feels himself flying on the wings of the wind. Come again, Bro. H., and we will try to give you a better taste of the real pleasure.

TOO MUCH OF A GOOD THING; LAYING OUT HIVES IN SYMMETRICAL ROWS SOMETIMES A MISTAKE.

IT is a mistake to have a queen-rearing yard laid out in straight rows, and have all the grass and weeds cut out. Hives should be located in groups of one, two, three, four, and five. Do not have any two groups of the same size and appearance near each other. If there is a group of five hives here, make the next group of two; another group of four. Make each group different from the adjoining one, and, if possible, put near some distinguishing object like a tree or a bush. One group can have a large tree, and another a small one. If tall weeds grow up near the entrance, all the better. While they obstruct the flight slightly, they help young queens in identifying their entrances. And, by the way, we made a mistake in Cuba in cutting away all the grass in front of the hives, and in putting them in neat straight rows. The native Cuban bee-keeper lets the grass grow. His hives are laid out very irregularly, with the result there is much less robbing than there would be if they were all laid out with perfect regularity in rows, and entrances pointing in one direction. In an apiary of the last-mentioned kind, it is no wonder the bees become confused, and that robbers get a good start before the inmates of the hive realize what is going on.

There is another point: It takes a great deal of time to keep the grass and weeds down. If I were running for honey and money only I would keep the entrances, the paths, and roadways clear, and that is all.

You will ask why you would not find that condition of things at our home yard here in Medina. Simply because it would offend some of our visitor friends. They expect to see something like a park. But take a trip up to the Harrington yard, and you will find things as they are in Cuba.

THE HANDIEST BEE-BRUSH.

DR. MILLER is quoted by the *Review* as saying there is nothing better for brushing bees than some growing plant, like asparagus, sweet clover, goldenrod, or aster. That is the kind of brush I use—not because it is better but because it is so get-at-able. I reach down to the nearest bunch of weeds or grass, and grab up a good handful—enough to make a good strong sweep. When I am through with it I simply throw it away. But where there is shaking and brushing all day, as during extracting, a special brush for the purpose —one that can be swashed in water — is better than a scraggly mass of weeds.

IN a recent issue of GLEANINGS I referred to the fact that Mr. Hutchinson was foulbrood inspector for Michigan, and that he was doing a good deal of his editorial work on the cars. Some of his later items are particularly meaty. Here it a sample:

> A lining of damp paper put into a vessel into which melted wax is to be poured will keep the wax from coming in contact with the vessel, hence there will be no dish to clean up afterward. Strange as it may seem, the paper will also peel off readily from the cake of wax. Neither will the cake crack while cooling, as it is not stuck to the walls of the dish. Mr. H. R. Miller, of Fulton, Mo., wrote me about this.

GENERAL MANAGER FRANCE is having his hands full. In eight different places in the United States bees have been declared to be a nuisance. Mr. France is looking after all cases, and showering in doses of truth and fact. There is one case of adulteration at Denver that is receiving his attention.

MR. H. H. HYDE and Miss Lizzie E. Adams, of Floresville, Texas, are to be married on the 18th of this month. Mr. Hyde is one of our occasional contributors; and although a comparatively young man he usually has something valuable to offer. GLEANINGS extends its congratulations to the young people.

TARRED PAPER FOR WINTER PROTECTION.

Answer to Editorial Comment on Page 371.

BY ARTHUR C. MILLER.

Mr. Root:—You have completely missed my point of value in my paper wrapping for hives. Your experiments have scarcely a thing in common with mine except that each contained the ingredients of bees, wood, wax, paper, honey, and nails. You tied paper around a hive, and then *covered it with a close-fitting winter-case*. You got thereby a very poor "chaff hive." I do not wonder that the bees died in it.

I took a single-walled hive, laid over it a sheet of tarred paper, folded it down and about the hive, and tacked strips of wood around the bottom edges. I thus secured a water-proof and practically air-tight wrapping of black. When the sun shone, that black surface absorbed the heat in a remarkable degree. Even during protracted cold spells the snow would melt from such covering, while it would remain on the other hives, both single-walled and chaff. The heat thus gathered warmed the hive through and through, so the bees could and did safely move about. When the sun was gone, the warm wood and air within that black covering yielded their heat very slowly.

My theory was this: On pleasant days the black-paper-covered hives would absorb, during the time the sun shone, as much heat as they would lose by radiation during the hours of its absence. Furthermore, that, even if it gave it up in less time, the loss would be so gradual that the bees would be able to re-form their cluster before the temperature got too low. Also the bees would have had the advantage each week of several hours of sufficient heat to enable them to move all they needed to. Practice proves the correctness of the theory.

The entrance, always wide open, being at the bottom, did not appreciably affect the results. Days when the wind blew strongly into or across the entrance, the temperature did not rise so much, and the bees remained closely clustered. You may argue that such warming-up would induce the bees to fly when it was too cold without. The facts are, it *didn't*.

I do not claim that such protection is sufficient in *all* climates; but I do believe it is by all odds superior to chaff or sawdust; and that, where bees can be wintered out of doors at all, they can be successfully and profitably wintered with no other protection than the tarred paper about their hives.

The tarred paper has two or three disadvantages. It is dirty to handle in putting on; is not good the second year; and the nailing-on of strips to fasten the bottom edges tight is undesirable. I have been looking for some sort of close-woven water-proof black cloth that is reasonably cheap. Enameled cloth is too expensive and too short-lived.

As a moral to adorn the tale, let me say that, had you grasped the *why* as set forth in several of my articles on the subject, you would hardly have made the mistake. Look for the *whys*. Find the *why*, then the methods will create themselves.

The general attitude regarding chaff packing has been as if the whole brood-chamber were of the same temperature as that of the cluster. If such were the case, then we might correctly infer that walls which would prevent the too rapid radiation of such heat would be desirable. But such is *not* the case. The cluster is, say, 65° F.; the air about it and the frames and combs outside of the cluster are almost the same temperature as that of the outer air. The chaff walls keep this air, frames, combs, etc., *uniformly cold*. Bright sunshine has precious little chance to heat it.

Providence, R. I.

[Apparently I did miss the point of your paper wrapping; but in reality I had practically the same thing in mind, as I will presently explain. I used newspaper wrapping around the hive, then slipped a thin winter-case of lumber over it, making a snug close fit. But mark this: the winter-cases were painted red, and red is almost as warm a color as black. Contrary to our experience, the red had a decidedly detrimental effect in our locality by inducing the bees to fly out when they should have stayed inside. The winter's sun in a protected inclosure will warm up a hive quite a considerable, if it be painted red or black. Our experience has shown us that white is a better color the year round. The tarred paper, being jet black, would draw more of the sun's rays, with the result that it would warm the bees up, thus aggravating the very trouble that I speak of.

I may cite you to a very familiar illustration in poultry-raising. The time was when it was considered best to have much glass in poultry-houses, the glass facing the south, of course. The object was to draw the sun's rays during bright days, warming up the coop. The effect was to make too great a change in the temperature from day to night, resulting in injury to the fowls. Now the practice, I understand, is to have no more glass than is absolutely required for light, and to paint the buildings white instead of a warm color as formerly.

The footnote above was sent to Mr. Miller, who writes:]

"The proof of the pudding is in the eating." Most of the colonies which were protected with the black paper now have work well under way in the supers (May 11);

while of those not so protected, but two colonies are so employed.

Bees within a black-covered hive *may* possibly fly unseasonably, but they *don't*. Such flights are, as a rule, due to other causes than warmth within the hive. I have often seen the bees moving about the entrance, and now and then one will hover about outside; but beyond this they seldom go—never harmfully so.

The example of the glass in poultry-houses does not fit. The glass permits greater heating (and more rapid), and *excessively rapid radiation* after the sun has gone. Also in such glassed houses fresh air was sadly absent. I've been through the mill, and made a success of it (poultry culture) before I gave it up.

Please try my whole formula before you say black paper is "not good." The formula is, plenty of bees, sound queen, abundant stores, *early preparation*, and black wrapping. But I may be mistaken. Two years is a short test. A. C. M.

[The point I tried to make was that extremes of temperature are detrimental to bees as well as to poultry. A cellar that is subject to a variation in cold, as is well known, will not winter bees as well as one that maintains an even degree.

While you take some account of locality, you do not consider that beginners may be misled. Where you are, it is milder than in and about Medina; and Medina is much milder than Marengo, Ill. A varying temperature that might not be disastrous or harmful around Providence might be decidedly so for another locality. I still feel that the average beginner in the average locality should go slow in applying a black covering, as you describe, around the hive, expecting that such protection will be equal to the regular chaff-packed hive. I base my statement, not on two years of experience on this question, but on a period of five or six with this kind of protection, and on extended travel among the bee-keepers where I have had a chance to see the results of the various kinds of winter protection. And let me say right here, I have known it to be a fact for bees to winter well in the locality of Philadelphia, and Washington, D. C., packed in the manner you describe. The whole question simmered down to its last analysis is one of locality.—ED.]

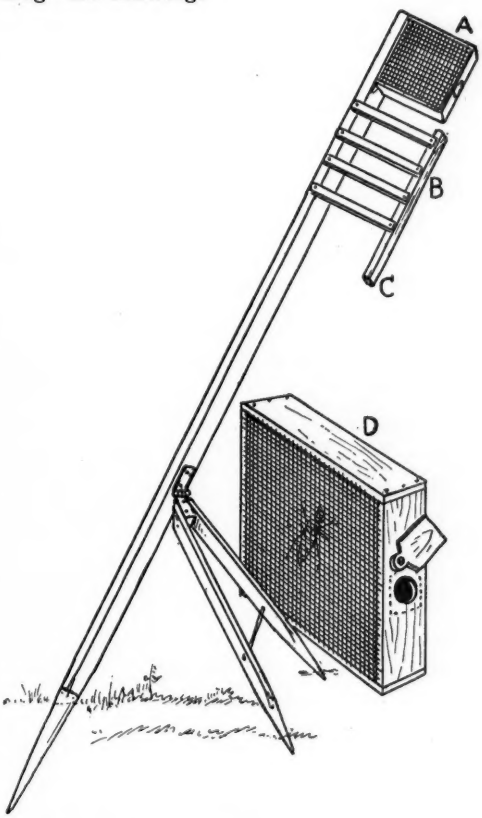
THE MIXING OF SWARMS.

How a Texas Man Divides up the Bees with a Decoy Queen into Several Hives; a Practicable Plan.

BY H. PIPER.

After reading friend Wm. McEvoy's article, page 288, I thought I would give a plan I had, as I do not believe in hindering a colony from casting a prime swarm when they decide to do so. That is nature's way. After-swarms are what I call "fever swarms," and I prevent that without pinching out cells either.

I have no patent on my plan. I have a cage about the size of a section, wire cloth on sides, and a hole in one edge that you can close up so as to stay closed. I put a queen (some old worthless one) in this, and fasten her in securely; no bees with her; then I fasten this securely on the end of a 1×3 batten, 8 or 10 ft. long, length to accommodate your condition. On the side of the batten I fasten a strip four or five inches away from it by cross-pieces, ladder fashion; the strip should be 18 or 20 inches long—see drawing.



Now, this is permanent, queen and all, and in my case the one queen has done me for four or more weeks. The bees feed her, and, when not in use, I hang it up in a tree; but if likely to rain I take it down and cover up.

The ladder-work fixture on the side of the pole is for the bees to cluster on.

Now, you must have the bottom end of the pole sharp, because you will often want to stick it into the ground; but prop up securely, so the weight of bees will not bear it to the ground; and if your swarm or swarms are high up, use the hook or projecting piece to attach to a limb.

We are now ready to use the outfit. We

will say that from Nos. 3, 5, 21, 32, swarms issue, and they all go together. We will just catch the queens (mine are clipped), and put them under a cup glass or in a cage, and set it down in front of the hive from which each came; then we will remove the hives 5 or 6 ft. away, and put empties with comb or foundation in their place (I generally give a frame of mostly young brood). Now we are ready for the fray. We will take the caged queen on the pole, and insert it in the bunch of bees, and shove it well up to the limb, gently of course; and when we think we have enough we will gently withdraw it and carry to one of the hives, and lay it sidewise close up to the hive, but not so close as to clog the entrance and start some of the bees in. If they do not move of their own accord when they start in, pick the queen up, carefully of course, so as not to injure her, and put her at the entrance and see that she goes in. They will soon be all moving like a flock of sheep. Then just raise your stick up a little and give it a quick jerk, and it is done, and all is well. Go back to the bunch and do the same way until you come to the last lots; then get what you can on your pole, and place it so that the end of the pole with what bees you can get that way are only a few feet away (the nearer the better, though I have managed them at 10 feet away, long range), and in plain view. Now you want a long pole to give the limb a sharp punch to dislodge them, and agitate the limb for about a quarter of a minute, or until they are attracted to the cluster on the pole. In case of a large limb or other thing they may sometimes settle on, use the smoker and bee-brush, gently at first, until you get them off; then apply smoke until the place is untenable.

This is the best way for hiving, and no sting. Somebody, I think, I hear saying, "Why, those bees will not stay there long enough for you to hive them that way." Let's see. You have had that old queen (in cage) in that bunch repeatedly. They have smelled her, and they will stay until you take them down, if you are not too slow —two hours, I should think, and I have had eight swarms in a bunch at once. Then, again, it is not safe to depend on the swarms (if only one) returning to their hive after they find their queen not with them, because some are liable to go to other hives; and if you have one swarm, and think it is only one swarm, and they will come back, another swarm may issue while waiting, and there may by chance a virgin have slipped in. In that case you know the result; also if several swarms issue at once, and are left, they are more than liable to go all together to one hive, and the rest of your hives stand empty. This plan *will* work, whether a swarm has a *queen of any kind* or not.

Calaveras, Tex.

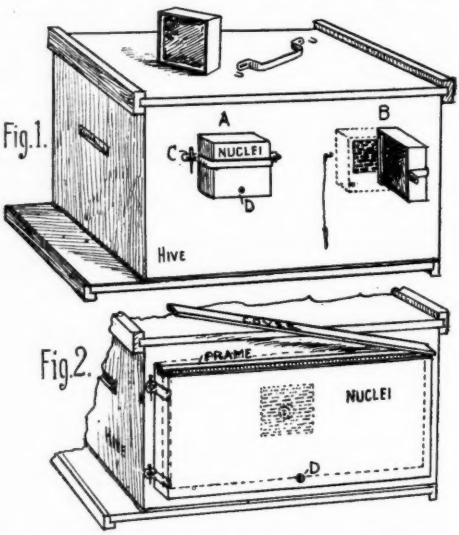
[Some one else, some years ago, told how a decoy queen might be used for catching swarms. At that time the scheme was considered to be entirely feasible, but of late but very little has been said about it. I have used it myself to a limited extent, but believe bee-keepers might employ it to considerable advantage in large yards where there is a tendency for more than one swarm to come out at once.—ED.]

REARING QUEENS IN FULL COLONIES.

Running for Extracted Honey.

BY D. R. KEYES.

Raising queens and producing extracted honey from the same colonies, and at the same time, can be done by boring an auger-hole in the side of a regular extracting-hive (or in both sides if you desire to run three nuclei to each colony). Over the hole, inside and out, tack a piece of perforated zinc, and then place against the holes one-frame nuclei, or the little section-box nuclei, like Swarthmore's, with a corresponding hole in the side to fit up snug against the hole in the colony. When you have your cells ready, just before hatching, form your nuclei by placing brood and honey in the little nuclei, and place them in position, and, after a few hours, you can give the



THE SWARTHMORE-KEYES QUEEN-REARING NUCLEI ATTACHED TO FULL COLONIES.

Fig. 1, A, B, nucleus boxes, one in contact with hive, the other swung to one side to show hole covered with zinc.

Fig. 2 is a thin box to hold full frames; frame, hole, and perforated zinc in dotted line.

ripe cells, and the queens will hatch and go out to mate at the proper time from a small opening in the nucleus box itself. You can continue to take queens and supply cells just as you would from any nuclei, and can go on working your colonies just as though the nuclei were not there. The little nuclei will be kept supplied with bees

from the colony, through the zinc; and when you wish to discontinue a nucleus, all you have to do is to put the bees and brood in the colony, and stop up the hole in the colony with a wooden plug or cork. The old bees from the colony will come into these nuclei, and protect them against robbers.

I prefer my little hives or nuclei made with one side off instead of the hole, as this puts the bees in nuclei closer to the hole in the colony; but if this is done you will have to be careful to fasten them against the hive by some means, which *should* be done any approved way. D. R. KEYES.

Wewahitchka, Fla.

[Your plan seems to be essentially the same as Swarthmore's, illustrated in our issue for Sept. 15, 1901, page 743. That the plan will work seems probable, and we are interested enough to give the matter a trial in our yards this summer. The fact that both you and Swarthmore pronounce it a success would seem to indicate that others might have confidence in it. The feature that commends itself to the average producer of honey is that he can go on producing his regular crop of honey and still rear a few queens for his own use, without in any way interfering with the work of any one colony.—ED.]

A WORD OF ADVICE FROM THE OTHER END OF THE LINE.

Comb Honey too High-priced; Extracted Honey Liable to be Adulterated.

BY KIT CLOVER.

You people sit down and chat together, month after month, about how to raise bees, and how to "shake" them after they are raised, and how to get the honey after they are shaken, and all that. No doubt it is all interesting to you; but, meantime, what of us? Here we sit, at this end of the line, the consumer's end, and here is the way the matter stands. Suppose I have a house and six children, husband, a boarder, and myself. We all like honey. We want honey. We are fond of hot biscuits and honey, and I propose to make the biscuits, and go out to the grocer's for the honey.

"Twenty-two cents a pound."

I look at the pretty little section of nice honey, and estimate it. There are nine of us, and one section will not give over four "helps," therefore I must get two sections, at 44 cts., and go without myself, or get three sections at 66 cts. This makes a rather expensive relish, and, on a small salary, can not be indulged in often. So I betake myself to the counter of extracted honey. These are attractively put up in cans or bottles. Let me say right here, all honey should be put in jars. The housewife will buy twice as readily knowing the pint or quart Mason jar will do for canning fruit, while the ordinary bottle is a dead loss. But now comes the pick. Who of us all can *know*, when we buy a jar of honey, that we are not getting glucose? This is where our trouble is, and this uncertainty prevents the sale of tons of extracted honey. Can't you get up in your might and procure such stringent laws as shall make it a crime to put up or to sell glucose or any kind of an imitation as pure honey? Make the penalty heavy enough, and I think the law can be enforced.

Please, Messrs. Beemen, when you sit down to talk, make this the subject of your thought until you sweep the spurious stuff out of the market.

Brooklyn, N. Y.

[The National Bee-keepers' Association, together with the local State organizations, is doing much to get laws that will make the adulteration of honey a crime. The National has already at different times sent delegates to the Pure-food Congress at Washington, and the last Congress of the United States came very near passing a national law that would have stopped traffic in adulterated honey between the States. Through the influence of organized effort in Illinois, New York, and Colorado, anti-honey-adulteration laws are in force. Ohio had already a good law before the bee-keepers of our State had taken any hand in the matter. California has a good law, but the officials for some reason are not disposed to enforce it. Bee-keeper and consumer alike are interested in pure food, especially in pure honey, and they should at once ally themselves with organized bodies of bee-keepers.—ED.]

FORMALDEHYDE FOR CURING BLACK BROOD.

How to Save the Brood, and How to Render the Combs Infected Safe for Use in Healthy Colonies.

BY G. W. HAINES.

I have read several pieces in GLEANINGS on formaldehyde for curing black brood. I have used it for two seasons; so I will send in my experience with it.

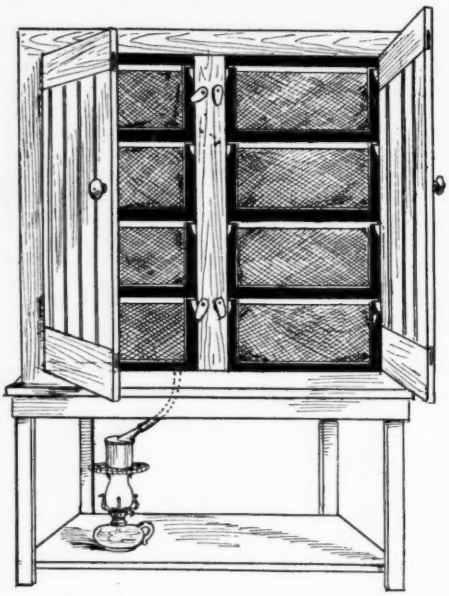
Formaldehyde can be had at any drug-store. If not in stock they will get it. I used it with a spray until I was satisfied it was no cure. Our State bee-inspector, Charles Stewart, asked me to make some trials of fumigation with formaldehyde; so I sent to A. B. Huested & Co., of Albany, N. Y. For $1.25 they sent me a kit for fumigating, and instructions. I made several trials that proved all right. I found my kit too small, so I made one. I will try to describe what I have now.

I made a large box or cupboard, tight joints, two doors that fit tight all around; where the door closes up I put in a strip of heavy felt. When the doors are closed it is as nearly air-tight as I could make it. It is just wide enough to take two tiers of frames, one in front of each door, and four rows high, twelve in each row. When full it holds 96 frames.

To fumigate I use a common bracket lamp. I set on top of the chimney a small

wire rack, about ⅝ inch high. On top of this wire rack I put a machine oil-can that holds about a pint; put a rubber tube on the spout of the can, run the end of the rubber tube in a hole at the bottom of the cupboard; put in the oil-can about half a teacupful of formaldehyde; light the lamp, turn it just high enough to boil the formaldehyde; then shut the doors tight. I have the lamp burning about an hour, or a little longer. By that time the formaldehyde is nearly boiled away. Leave the doors shut 24 hours, and there will be no black brood, bees, nor moth-larvæ left. Open the doors, and air until they smell all right, about half a day, and they are ready for use again.

Last season I put two very light colonies down in another lot, and used them to stack on the best frames of brood. As fast as I found a diseased colony I shook them out on foundation at evening; just as the bees stop



flying I cover all adjoining hives with some old sack, so no bees will enter them. As soon as they all get in I put on a piece of queen-excluding zinc to keep them from absconding; then stack the best frames of brood on one of the light colonies. Last season I had them 5 to 12 frame hives high. As soon as the brood would all hatch I shook the bees off, fumigated the combs, and used them again; and I kept on stacking as long as I could find any disease.

When the swarms I use to stack have too many bees I shake out a swarm on foundation, and set them in a new place. Some of the worst-diseased combs, after fumigating, I marked on the dates, and set them in the center of a healthy colony, and found them solid full of capped brood.

To-day, Apr. 20, I have 92 colonies. A near neighbor that had more bees than I had, when black brood struck us, lost the last of his last winter, and many more have one, two, or three left.

Last fall I fumigated all of my extracting-frames, and all section boxes that had been on the hives, before putting them away.

Mayfield, N. Y.

[The wire rack to which you refer is, I judge, a little device to be fitted on to a lamp-chimney that can be bought at the stores for heating a cup of milk for children at night when the fire is out. We had such an arrangement when our boy was a baby, and we found it to be very effective. If it can not be obtained, any arrangement that will hold an oil-can about half an inch above the top of the glass chimney would answer. The oil-can shown in the illustration is probably not the same thing that Mr. Haines has in mind. I judge that he uses a spring-bottom oil-can, with a *perpendicular* snout, such as can be obtained for 10 or 15 cents at any hardware store. An ordinary rubber tube can be slipped over the snout; but it should first be cut off to give a larger opening.

Apparently it is important to have the fumigating cupboard or box as nearly airtight as possible. Mr. C. H. W. Weber, of Cincinnati, who has had considerable experience, says that an ordinary hive is not tight enough. He recommends putting the combs in hives, the hives inside of an airtight box, then generating gas and forcing it into the box.

As Mr. Haines recommends, combs containing the disease may be stored in upper stories above perforated zinc over a strong colony. What brood is healthy can hatch out. The combs can then be fumigated as directed. We shall be glad to get reports from our subscribers who are in position to test this method of cure.

So far I do not know of a case where, *when the gas has been properly applied*, it has failed to disinfect the combs.

If more convenient for our subscribers, they can order their fumigating apparatus and chemicals of C. H. W. Weber, Cincinnati, O. The chemical comes in two forms —fluid formalin and solidified formalin. The former is in 1-lb. bottles costing 50 cents; postage 40 cents extra. The latter is in ounce packages costing 75 cents; postage 5 cents. The solidified formalin is much more concentrated and cheaper — one ounce of it being equivalent to 3 lbs. of the liquid article. The generator, including ½ ounce of the solidified formalin, costs $1.25; postage 20 cents. Send your order to Mr. Weber. And, by the way, Mr. Weber has a little book that gives full particulars on how to apply this drug. Perhaps I am giving our friend a free advertisement; but he has spent not a little time and money in helping to develop and bring before the public this new method of cure, and it is no more than right that he be rewarded for his pains.—ED.]

MORE ABOUT BEE-KEEPING IN JAMAICA.

BY GEO. W. PHILLIPS.

[Mr. Geo. W. Phillips, the writer of the following article, was born and raised in Jamaica. A little less than a year ago he came to the United States and subsequently accepted a position with us. As considerable interest has been manifested regarding Jamaica I asked him to follow up the article of Mr. Alexander, in our last issue, with another one telling something about his own bee-keeping operations on the island, and of that remarkable honey-plant the logwood. Mr. Phillips owns 500 colonies in two yards, one of which — the smaller one — is shown in the first illustration. He is at present our head apiarist, having charge of our bees in and about Medina. In this connection I might state that Mr. Harry Howe, of "lightning-operator" fame, is running our Cuban yard of 500 colonies.—ED.]

Many questions about Jamaica have been fired at me since I came to the States—some of them easily answered, and some almost unanswerable—questions of every sort, and upon almost every subject imaginable, and bee-keepers have not been backward in asking their share. For the benefit of the latter, therefore, I write this article, and hope it will be of interest.

There is probably no place where conditions are more favorable for bee-keeping, and where the apiarist can find more real pleasure in the pursuance of his favorite task, than Jamaica. To begin with, one has no winter and early-spring problem to solve; but pleasant sunshine, fragrant flowers, and booming colonies exist; while in the northern country, zero weather and chaff cushions are the order of the day.

Monster apiaries can be run profitably in Jamaica. During the logwood bloom, which comes somewhere between December and March, 600 colonies or more could easily find pasturage in the same locality; but since the flow of nectar from other sources is not correspondingly heavy, most of the large bee-men keep but 300 or 400 colonies in each yard.

Too much can not be said of logwood as a honey-plant. It has always been, and very likely will always remain, the staple honey-plant of the island. While the American bee-man sees in dismay the forests of basswood yielding to the ax of the woodman, and his prospective harvest from alfalfa nipped in the bud, the Jamaican bee-keeper can know with assurance that, unless the climatic conditions are extremely trying, the big yields from logwood will continue as the years come and go.

AUCHENDOON APIARY.

This photo shows a part of one of our apiaries at a place called "Auchendoon." The trees in the picture are very fine specimens of the logwood. There are thousands of acres of the same around; and when the bloom is on, and those giant colonies get fairly started, the rush and roar can better be imagined than described.

In this apiary the ten-frame hive is used exclusively. Had I the chance to start over again I should prefer a larger brood-nest—the ten-frame Jumbo or twelve-frame Langstroth, for instance. The long-continued

honey-flows; the chance for building up to meet these flows; the swarming problem, and other conditions peculiar to the tropics, combine to render a large brood-nest desirable.

Our apiaries are run for extracted honey entirely. The picture above was taken during the honey harvest. Our manager (who, with his assistant, appears in the picture) was out of vessels to put the honey in, our shipment of tins being a little late. Imagine those upper stories filled, and honey still coming in, and the pressing need of vessels, and our manager's nervous impatience will be obvious.

At the left of the picture is a hive with the cover badly warped, and the side of the hive covered with bees. Covers must be well made in order to stand the heat of the tropics without warping.

Many and happy are the days I have spent working in the shade of those logwood-trees in "Auchendoon apiary." The clear blue sky, visible through the foliage overhead; the fresh sea-breeze stirring the slumbering branches; the gurgle of the brooklet flowing hard by; the beautiful green "commons," spotted with grazing cattle; the distant music of the ocean waves upon the bleached sands of the shore; the towering mountains, their bosoms decked with tropical vegetation, all uniting to take away the drudgery from hardest labor, and sweeten the cup of daily toil.

In each apiary we keep about 100 nuclei for queen-rearing, and requeen about two-thirds of our colonies every season. Queens have no winter to rest in, but must be as prolific in December and January as they are in July; consequently they get worn out early. Exceptionally good ones may be kept for two or even three years; but on the whole it is more profitable to weed out all but the best every year, replacing with young vigorous queens.

We use the Doolittle method of queen-rearing exclusively, modifying the same here and there as our experience and that of others show such modifications advantageous. When our colonies are strongest, cells are built between two frames of brood in upper stories; and between August and December we generally use a ten-frame hive, divided in the middle by a perforated zinc division-board, the queen laying on one side of the hive, and cells being built on the other.

A strange thing about Jamaican bee-keeping is that no fear need be entertained that bees will swarm during the heavy logwood bloom. They swarm almost immediately after, however; and unless one knows how to manage, supers of unripe honey will be removed by the swarms to help

Apiary at the Cross Clarendon. Mr. F. A. Hooper in the foreground.

build their new homes. This most unpleasant proceeding may be obviated by the use of the "shook-swarm" system. After having given it a thorough test we are highly gratified with the results obtained.

Through the medium of various publications on bees, Jamaicans can keep step with the times, and bring into use in their apiaries the most modern systems. GLEANINGS and other bee-journals are eagerly looked for, and their contents devoured by all who are interested in the bee business. Something was said in GLEANINGS not long ago about a man who read his copies of the same through and through, advertisements and all. I can tell of one of our men who was not even satisfied with the advertisements in the A B C of Bee Culture, but he learned the entire poem at the beginning of the book—

"When Novice first began to tell,"

etc, and was proud of being able to repeat it through without a hitch.

Jamaica boasts of some very distinguished bee-men; and it is my pleasure to say something in this of one of the most extensive bee-keepers in the island. I should like to introduce him, but can not, since I am sure the readers of GLEANINGS are already acquainted, through its pages, with Mr. F. A. Hooper, of the firm of Hooper Brothers, whose picture appears opposite.

Among the pioneers of Jamaican apiculture the names of Hooper and Nash stand forth perhaps as prominently as any others. The former has for years held the agency for The A. I. Root Co., and, as a result, is well known by West-Indian bee-keepers. The following illustrations show some more of the Hooper Brothers' apiaries.

These are, for the most part, situated near the railroad stations, so that, while we have to resort to the horse and trap or the bicycle as a means of locomotion between apiaries, Mr. Hooper does the most of his traveling on the train.

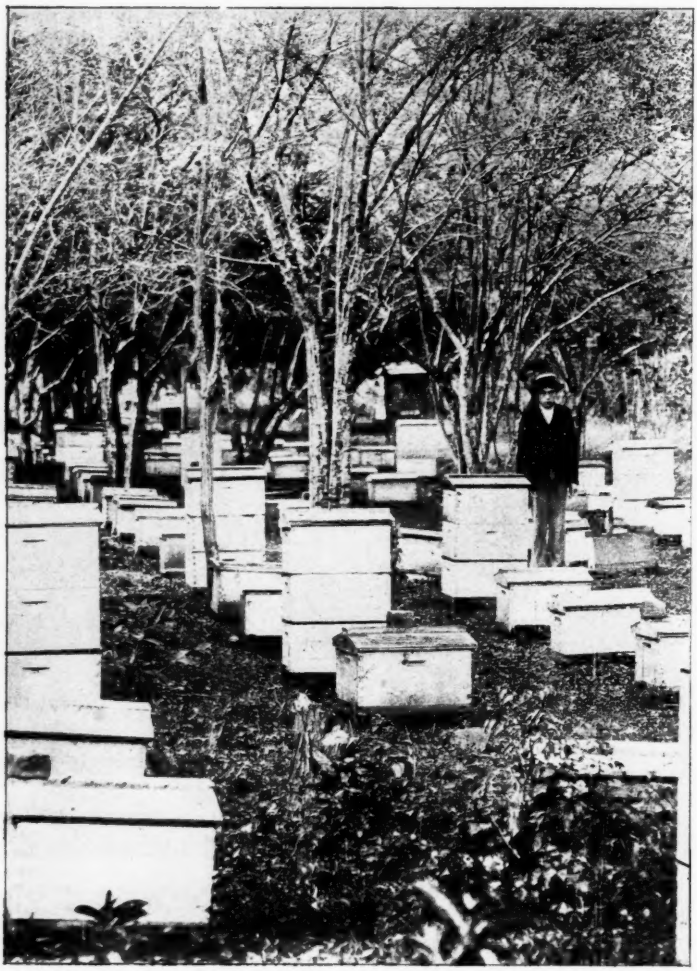
I once made up my mind to visit Hooper Brothers' apiaries; and, with this object in view, I started for Kingston with a friend. On reaching that place we found that the head of the firm was ailing, and consequently we did not have the pleasure of being shown around. As a result I am not able to give as detailed an account of the apiaries as I might had I visited them.

One of Hooper Bro's' out-apiaries run for extracted honey. The trees are logwood, of which there are 1000 around, and in the honey-flow enough bees can not be got to take off the nectar.

The views, however, will speak for themselves. I have heard it said that from 500 to 800 colonies are kept in a single yard. While this may be exaggerating a little, it is a fact that their apiaries are colossal.

Mr. Hooper is the most extensive queen-breeder in the West Indies. His bees are for the most part of the five-banded strain. I feel that a tribute of praise is due him for

the pains he has taken to keep foul brood out of the island. In introducing breeders imported from the States and Italy into his apiary, he always takes the precaution to remove each queen from her shipping-cage and attendants, place her in a new clean cage by herself, starve her for about twenty minutes, and then introduce her. The old bees and cage he consigns to the flames. As a result of this precaution, not one case of foul brood has yet been known in Jamaica.



Hooper Brothers' queen-rearing yard at Barbican, St. Andrews. The young man standing in front is the eldest son of the senior of this firm. The little house in the center is the transposing-room.

A booklet, entitled "Bee-keeping in Jamaica," has recently been published by this gentleman. For beginners, and, in fact, any one interested in tropical bee-keeping, it will be found both interesting and instructive.

I have met Mr. Hooper face to face but once in my life, although for years we have had correspondence. In the half-hour that we talked together he impressed me as being an enthusiast; and to this fact, as much as to any other, I attribute his success in the bee business. Show me the man who is signally successful in any department of life, and I will show you an enthusiast. The man who has an object in life, and justifiably applies every faculty of mind and power of body in accomplishing his lifework, is the man who succeeds. There are two classes of people in this world. Of one class it may be said, as was said of the "village blacksmith" — "something attempted, something done;" and of the other, "nothing attempted, nothing done" — that is, nothing specific attempted. True it is, that the former are often laughed at and called cranks; yet it is a satisfaction to know that they are the

cranks that turn the wheels of progress in human affairs.

I take this opportunity to extend my best wishes to the bee-keepers of Jamaica.

Medina, Ohio.

DRIVEN SWARMS.

Method of Treatment; Some of the Difficulties to be Overcome.

BY A. J. WRIGHT.

I use the word "driven" instead of brushed, shaken, jounced, forced, etc., because it expresses a distinctive feature of the plan I use. I was considerably surprised when the matter of brushed, etc., swarms was first brought up in GLEANINGS that you seemed to regard it as something new. Why, Mr. Editor, I have been practicing it for a long time. In fact, it is the only method by which I can secure a paying crop of honey in this locality. I can not say whether this plan will work well in all localities; but in localities similar to this, where the honey-flow is usually short and quite uncertain, it seems to be just the thing.

The first and very important step is full colonies and an abundance of stores in the fall; brood-rearing at the earliest possible time in the spring, which I secure as follows:

About the middle of February, if the weather is mild, I set the colonies out of the cellar, allowing them to remain until it turns cold again, when they are replaced. The strongest and healthiest will now start brood-rearing if the temperature of the cellar is not below freezing. About the middle of March, if the weather is favorable, each colony is placed on its summer stand, and is well protected by outer covering. Last spring my bees were set out March 22, and examination showed brood in various stages, the best colony showing four frames of capped brood on that date. Some writer (was it Mr. Somerford?) said in GLEANINGS that only a weak swarm would start brood-rearing in the cellar. This is not at all true with me; but the reverse is the case.

One of Hooper Brothers' out-apiaries in Clarendon. F. A. Hooper in the left foreground. Building shown is honey-house.

Each colony is now worked for brood for all it is worth; and when the frames are pretty well filled, another hive is placed above with queen-excluding zinc between, putting capped brood from below above and giving empty frames below, when young eggs are given above, and this is continued at intervals until queen-cells are started in the upper story. When some of these cells are capped over, all but three or four of the best are cut out and destroyed, leaving the

bees are hatching lively a frame of larvæ or others to hatch. Before any queens have hatched out, the perforated zinc is removed, and a frame with wire cloth tacked on the upper side is put in its place, and on this frame ¼-inch strips are placed on three edges, leaving the fourth open for an entrance. This upper-story entrance should be on the side opposite the lower one. In due time a queen will be found laying above, and both stories must be worked for brood to their greatest capacity, and additional stories given above or below if required. This must be continued to the commencement of the honey-flow.

Now take a box of the size of the hive in use; remove the upper story containing the young queen, and place the box over it. Now smoke the bees lightly, first breaking the cappings in a frame below, and then drum gently on the hive, giving the bees ample time to fill their honey-sacs. Drum these bees into the box above, making a *clean* drive if possible. Now remove the old queen with a frame of adhering bees, and place this frame in any empty hive-body. Now break the cappings of a frame in the hive from which the old queen was taken; place the box containing the driven bees over this hive, and drive all bees from below into the box above. All being of the same odor, no trouble will result. Have now your frames and supers ready, and dump the bees in front of the entrance. Use all drawn-out comb in the brood-nest below, if shallow, and full sheets of foundation in the supers. I have never found it necessary to use perforated zinc between, yet in some localities it seems to be necessary.

The principal objections to be overcome in the brushed, etc., swarm plan are:

1. A tendency to abscond.
2. The building of too much drone comb.
3. The deposit of pollen in the sections.
4. The building of queen-cells in the colony of the parent stock.

The *driven*-swarm plan, as I practice it, overcomes the objections as follows:

1. The driving of the swarm, as detailed, reduces the colony to the condition of a natural swarm, and thus reduces to a minimum the liability to abscond.

2. The driving of the *young* queen with the swarm insures the building of worker comb.

3. The use, as far as possible, of drawn-out comb in the brood-chamber is a safeguard against pollen in the sections.

4. The old queen is a safeguard against the building of queen-cells in the parent stock.

If increase is desired, the old queen and hatching bees will furnish it. If not desired, then the worker bees may be given from time to time to the new swarm. By the above method there will be no swarming if sufficient room is given in the supers.

The foregoing plan, to be successful, requires close attention to details, a thorough knowledge of the habits of bees, and of the pasturage in the locality of the apiary. I do not, therefore, recommend the plan for beginners.

Since writing the above I have received the Dec. 1st number of GLEANINGS, and note on page 978, Mr. Editor, that you want something on the question of foundation or empty combs in the brood-chamber.

If the frames are shallow I use *all* empty combs if possible — filling out with full sheets of foundation or starters if necessary — for the reason that the queen and bees know instinctively that the first thing to do is to produce brood, and they use the material best suited to their immediate needs — namely, drawn comb. The bees proceed at once to clean out this comb, and this gives the queen ample room for the immediate deposit of eggs, which keeps her from going into the supers. As soon as the queen begins to lay, the bees will put pollen below, and neither eggs nor pollen will go into the supers.

When the bees are slowly driven — not shook, brushed, jounced, etc., and allowed to *fill up* on honey, their natural instinct is to use this honey converted into wax for comb-building; there being no use for it below on empty combs, it is carried into the supers, and the foundation in sections is rapidly drawn out.

If foundation or starters only are used in the brood-chamber, the bees can not draw it out fast enough to accommodate the full egg-laying capacity of a young prolific queen, and this is particularly true of shallow frames or a contracted brood-chamber.

Bradford, N. Y.

SNAP SHOTS GATHERED AT THE ONTARIO CO. BEE-KEEPERS' CONVENTION.

BY F. GREINER.

As to the disposing of our honey, we bee-keepers are not doing business on business principles. We ought to co-operate.—H. L. Case.

We New York bee-keepers have the advantage over our western competitors. We are at the consumer's door.—W. F. Marks.

Crop reports of an official character would assist us in establishing uniformity in prices of honey. The sum of 2000 dollars was set apart by the government for apiculture, but was not used. A definite sum should be set apart for gathering crop reports. If this business were conducted by the government, figures would not be manipulated, and nothing would leak out prematurely.—Frank Benton, Washington, D. C.

There is a class of bee-keepers who can not be educated; they will undersell any way. The cure is, to buy their bees. Ricker, Iowa.

A good way to space brood-frames is by way of a wide staple to be driven across each

corner of the frame. This will at the same time act as a brace.—Frank Benton.

I move my bees without spacers. I move 100 or more colonies every year.—Ricker.

After a colony had been wintered in a single-walled hive, the hive-walls contained 3 pints of water, or 5 to 6 lbs.—F. Benton.

Marks can not winter his bees in chaff. Ricker wants no chaff; Greiner, only chaff or place in cellar.

The Cyprio-Carniolan bee is a success. If a full-blood Cyprian queen is used, the cross will be gentle. The temper of a cross comes from the male, the Carniolan drone. This cross has only one fault: It will not do to breed from them.—F. Benton.

If you practice clipping queens' wings, be sure you clip *every* queen.—Marks.

Best time to clip queens is during fruit-bloom.—H. C. Roat.

A pair of scissors with a curved blade is the handiest for clipping; prefers one not too short.—Greiner.

The wings assist the queen in walking; Should not be removed entirely or cut too short.—F. Benton.

To cure a drone-breeder, give a comb of emerging bees; a few days later, another; then introduce a queen.—Benton.

We manage our apiary as follows: Keep the entrance cleared in early spring. When warm enough we look over the bees, clip the queens, give honey when necessary; contract, tuck up, and leave alone till honey-flow, when packing is removed and supers given. When swarming occurs we hive with five frames on old stand, and put all boxes on the new swarm; shake part of the bees from the parent hive into the young swarm, and move it to a new location, well tucked up, and then leave it alone. The young swarms are given room as necessary; and when the white-honey season is over we give each two or three empty frames, when no more is done with them except packing in the fall.—Master Case.

Aster ericoida rarely fails to produce honey.—Benton.

Every honey-producer ought to know how to rear good queens. The use of swarming cells will eventually produce a swarming strain of bees. Good cells may be selected by their size and regularity. Jarring of cells may result in the death or crippling of the young queen. After her last larval moult, the queen remains attached to the food. Some food may be taken by osmosis. The umbilical cord (of Gallup) is a mistake.

The necessary conditions to rear queens exist during the swarming season. A colony rearing queens should have plenty of stores; unsealed brood had better be removed. Absence of brood will produce a great desire for a queen, and the larval food produced by the thousands of nurses is available for the rearing of queens. Had 200 cells built by one colony, and nearly all produced good queens. To confine cell-building bees is not necessary. Naturally built cells are better than artificial cells. It is a good plan to remove royal larvæ from natural or even post-constructed cells, and substitute minute larvæ of our own selection. To form nuclei with full frames is convenient but expensive. Two combs are not as readily occupied by the queen as three or more frames. Small-frame nuclei, three to five frames each, of ⅓ L. size, are convenient, and my preference. A permanent feeder is essential in nuclei.

The number of mating hives in an apiary would be about 20 for each 100 hives of bees.

The idea of giving an abundance of room to a queen in a mailing-cage is wrong. The food apartment should be coated with wax; and, when filled, the food again should be covered with wax. Powdered sugar and extracted honey is the best food.

In the selection of stock to breed from, I use the following rules: Observe the markings first. They should be right. The workers must be of large bodies. Note their behavior, their irritableness or docility, their activity. A queen should be large around the waist under the wing; wings long; the color should, in case of the Italian race, not be light yellow nor black.—Benton.

The use of full sheets of foundation in section boxes is a matter of dollars and cents. It is money in the bee-keeper's pocket. Many bee-keepers have gone back on the use of foundation in the brood-chamber.—C. C. Southerland.

It pays to use foundation in sections; but the quality of the honey is impaired by its use.—Smith.

MASSIE'S HIVE AND BOOK.

Some Corrections.

BY T. K. MASSIE.

Mr. Editor:—Fully believing that you mean to be fair, and knowing that you are rushed with work, and seeing that, in your review of my book, you make some statements that are liable to mislead your readers, I ask for space to correct them.

1. On page 376 you say, in substance, that in my plan of direct introduction of queens, the queen is let loose on the frames of hatching brood which are separated from the colony to which she is to be introduced, by "a thin board." The fact is, she is separated from the bees below by a *wire cloth*, which is nailed to a thin board. The plan is as simple as can be, and is not cumbersome. Simply put in one queen and remove the other, and she is *absolutely safe*. Any one who takes the time to look at the reasons why the plan is safe will see that failure is impossible.

2. You say the hive "is similar to the Danzenbaker, which seems to have suggested some of its features." The fact is, I was using most of these features before I ever knew of friend Danzenbaker, as he saw when he visited me in 1898. It seems strange how different men hit upon the

same thing, and without any knowledge of each other. I invented a $\frac{3}{16}$-inch top-bar frame, and am testing it, and it can not possibly sag. About the same time, Mr. Thos. Chantry, of South Dakota, struck upon the same idea. We knew nothing of each other's existence, and nothing was suggested by either one to the other. The same is true of Mr. Danzenbaker and myself. Mr. E. F. Atwater, of Boise, Idaho, thinks so well of the thin-top-bar frames, that he has, by permission, had frames made for 200 nine-frame cases.

3. You say, "Close-fitting closed-end frames in a *deep brood-chamber* [italics mine] are liable to cause trouble by swelling. . . A close-fitting frame *might* be made to work provided it were loose enough." I know that a half-way indorsement of a thing is apt to do great damage by leaving the impression that it had already been tried and proved to be a failure. Your objections here, if valid, would completely knock out of existence the Danzenbaker hive — the best one your firm ever made. I know by this, that, in your haste, you misunderstood the construction of my hive. Were it not for this fact I might be so uncharitable as to ask, "Why, without any foundation whatever, go outside of the facts to lug in an imaginary objection?" I reply: 1. My hive is large, but is not a *deep-brood-chamber* hive; 2. The looseness *is already provided for* in the yielding springs, the same as is the Danzenbaker hive. This could also be provided for, as suggested to me by Mr. Arthur C. Miller, by means of yielding vertical strips in hive side-walls; 3. That with leaky covers all parts of the hive give trouble by swelling, which is not met with when good covers are used; 4. That a thing is often condemned on account of the *manner* in which it is used. Close-fitting closed-end frames would, perhaps, give trouble in your Dovetailed hive as it is now constructed; but a slight change in construction would overcome the trouble, and enable you to use a good thing without any bad results.

Tophet, W. Va.

[What appears to you to be a matter of haste, perhaps, on my part, was simply a question of *room*. I had just a little space, and was compelled to condense — indeed, I dictated the review of your book twice, and the second time I cut out every detail, giving, as I thought, the bare outline of the main or essential principle. If the reader desired the details he could send for the book.

Perhaps you feel I haven't tried closed-end frames in deep-brood-chamber hives. If you will go over the back volumes of this journal for about ten years ago, you will find where I tried, as I thought pretty thoroughly, closed-end frames such as I saw at the apiary of J. Y. Tunnicliff, in New York, and my criticism was based entirely on personal experience. The possible defect that I pointed out does not apply to the Danzenbaker, because that frame is not close-fitting. There is a chance for end play and finger room, and the end of one of the frames may be lowered faster, to a certain extent, than the other, without sticking or pinching. Very likely the closed-end frame, as you make it and use it in your hive, will give no trouble, and I therefore stand corrected.

But leaky covers are not the only thing to cause the swelling of parts of the hive. Damp weather will do the same.—ED.]

SIFTED SWARMS.

Don't Let your Bees Get into a Mix-up.

BY T. J. ADAMS.

On page 288, Apr. 1, Wm. McEvoy gives his way of preventing a mix-up when queens are clipped. When queens are not clipped, how shall we prevent it? With 300 colonies in a space 65×75 feet, and not a queen clipped, we succeed fairly well as follows:

Close the hive tight as soon as the swarm begins to issue. At the end of five minutes let out a dozen or two bees, one at a time. If they take wing, close the hive for five minutes more. A strong colony might smother if confined longer. It may be necessary to repeat this several times, or until they do not take wing when let out, but walk up the front of the hive, buzzing and fanning; then open the hive. They are then cured of the swarming-fever. Give the bees room, and the result will be satisfactory. I think they kill the old queen, and her place is soon filled by a young queen, which is usually a profitable exchange. If increase is wanted, take one or two combs of hatching brood with a few bees, and a good queen-cell, and a comb of honey to form a nucleus.

Sometimes we wish to save the queen, or the queen may be out before we see the swarm issuing. We then take two empty hive-bodies, two queen-excluding honey-boards, and the bee-smoker, to where the swarm clusters. Put one honey-board between the empty hive-bodies, and the other on top for a lid, and raise one end of the lower hive for ventilation. Shake the cluster into the upper hive-body, or, if more convenient, shake into a large pan or other light vessel, and carry to the hive, always carefully covering with the honey-board as soon as part or all the bees are emptied in. When all are in, a few good puffs of smoke given through this honey-board cover will drive the bees into the lower hive. The queen will be in the upper hive between the honey-boards. Carry her away, first jarring the bees off that are clustered under the lower honey-boards. The queen is now very easily found. Kill her, or form a nucleus with her as above. To find which hive the swarm came from, smoke and scatter the bees in the lower hive-body. Unless a virgin queen goes out with the swarm they will return and cover the front of their

hive. Our colonies are strong in two-story ten-frame or three-story eight-frame hives. We have never been troubled with second or after swarms when all the bees were returned to the old hive; and by giving room they always do better with me than when allowed to swarm.

To tell how takes much more time than to do the work. I have screened two large swarms in five minutes, using the same hives and honey-boards for both.

I used to dread the swarming-time; but now my mind is at rest, for in my apiary I am master of the situation when there is no virgin queen with the swarm. Possibly there might be after-swarms in some localities, but I do not have them.

Russell, Ala. T. J. ADAMS.

SHAKEN SWARMS FIFTY YEARS OLD.

Is not Father Langstroth the Originator of the Forced-swarm Method?

BY D. C. L.

I have been so situated that for months past I have read none of the bee papers. I now have before me GLEANINGS for Nov. 1, in which I find several references to "forced" or "brushed" swarms, and an article of some length by Mr. Stachelhausen, on the same subject. Some question seems to have arisen as to who is "the author of the brushed or shook swarm method;" and an editorial note appended to Mr. Stachelhausen's article gives him the credit, as he has practiced it for over twenty years.

Now, if I am not greatly mistaken Mr. Langstroth practiced substantially the same method more than *forty* years ago. I have before me his book published in 1862, in which he devotes several pages of the 10th chapter to "Artificial Swarming." Beginning on page 154 he describes at length his method of forming forced swarms. Is it not a fact that father Langstroth is entitled to the honor of introducing the system?

Springfield, Mo.

[You are right. In the chapter on artificial swarming, Mr. Langstroth does describe a method of "forced swarming" very similar in many of its details to the plans we have been lately advocating. He goes on to say how unsatisfactory mere dividing is to secure the results obtained from natural swarming; all plans of artificial swarming he condemns save one, which he calls "forced swarming." He directs that the operation be performed at the beginning of or just before the swarming season. The parent hive is to be removed from its stand, and an empty one or a decoy hive put in its place about ten in the morning, when the bees are flying thickest. The old hive removed is turned upside down, and the bees from it are drummed up into a box. This is then set down on a temporary stand. The old hive is put back on its old stand to catch the flying bees, and the bees in the decoy hive which had been on the old stand. It is then removed to another stand, when the hive or box with the drummed-out bees is put back on the old hive stand. Just why Langstroth recommended so much unnecessary manipulation is not explained, any more than that, in his opinion, field bees were necessary to take care of the brood from the parent hive. Perhaps this may be a sufficient explanation; but ordinarily we would not suppose field bees were just the ones for this kind of work. Had he recommended, as he suggests further on in the chapter, removing the old hive, shaking the bees in the morning, and getting nearly all the bees in a new hive on the old stand, his plan would have been virtually the same as the shake-out plan of to-day; at all events, we have Langstroth indorsing the basic principle of the shake-swarm plan now in vogue, and condemning the plan of artificial increase by a mere dividing.

It is remarkable how Langstroth antedated so many of us in our new (?) discoveries. This is not the first time we have reinvented some methods found in his book. While it is possible that a novice taking up his work, and reading his methods of "forced swarming" would fail to get the real essence of the plan now in vogue, yet there is no denying that he had the *idea;* and I believe it is no more than right that we accord to him the palm of original discovery of "forced swarming." When I say "forced swarming," he used exactly that term in the first edition of his book away back in 1852 and 1857. We thought we were new in adopting this name; but here again Langstroth was ahead of us. Nothing but consummate genius could have cut the ground clean out from under us fifty years before in so many things as is done by the father of American bee-keeping. Well does he deserve the title that has been so justly applied to him.—ED.]

USE OF FOUNDATION.

Full Sheets are More Profitable; the Fallacy of the Crowded Brood-nest.

BY ADRIAN GETAZ.

A few days ago, while looking over my bee-papers for some information, I came across several articles about the use, nonuse, and abuse of foundation. If I have not misunderstood the writers, the only point considered was the amount of wax saved to the bees by the foundation given, or lost to the bee-keeper, in case the bees could have secreted that amount of wax just as well. This seems to me the smallest side of the question, if that expression can be used. But before going further, let me make a comparison. Suppose you have a brick wall 32 feet long by 20 feet high. It takes 4 feet of space to accommodate a brick-lay-

er, so you can put 8 men at work. Now suppose a second wall to be 64 feet long by 10 feet high. That wall contains as many bricks as the other, yet it can be built in half the time. Why? Because you can put 16 men at work instead of only 8. Do you see?

Now suppose you give some of your colonies full sheets of foundation to some other fair-sized starters, and to the rest only small starters. Two or three days later you go and look. Those having the smallest starters have only them perhaps to only one-third of the section. Those having the larger starters have extended them to two-thirds and perhaps a few drops of honey are deposited already in the deepest part.

But the full sheets have been drawn over nearly their whole surface; the cells are partly built up, and quite an amount of honey is already in. Why the difference? Simply because there is room for a larger number of bees to work at the same time on a full sheet than there is on a starter. The bees might be there, and the wax scales also, but only a limited number of bees could work on the smaller starter, just like the masons on the wall above referred to. I think this is the most important point gained by using full sheets of foundation.

CONTRACTION.

Contraction, or small brood-nests, came also under consideration with a number of writers. Their argument is something like this: If, when the honey-flow opens, there is room in the brood-nest, the bees will store the honey there, and go into the sections only after the brood-nest is full. If, on the other hand, the brood-nest is full, the honey brought in by the bees will *necessarily* go into the sections because there is no other place to put it. Don't you see?

Yes, I see—that is, providing it is so. May be it is a question of locality. In my locality the thing does not quite work that way. At the opening of the flow I have only sheets of foundation, sometimes only starters in the sections. In this locality it is impossible for the bees to store honey in empty sections. How it is in Illinois or Michigan, I don't know. It takes about three days to establish the wax secretion in full, and that many more days, or about, until sufficient headway is made in the sections to admit a rapid storage of what can be brought from the field.

Now suppose the brood-nest full. What will be the result during that first week? Having no place to deposit the nectar, the field bees will necessarily be idle; and the result is, the first week of flow will be practically lost. Lucky will be the apiarist if the bees thus forced to remain idle do not take a notion to swarm.

If we use large brood-nests there may be, at the opening of the flow, perhaps two, three, or more combs empty, or practically so. They will be filled rapidly with honey.

The movement of the bees, the constant handling of the nectar, the fullness of the bees, will provoke the secretion of the wax, regardless of the room in the brood-nest; and of the strength of the colonies, and the temperature, are right, the comb-building will begin in the sections, *not quite but nearly as soon* as in the other case. So, in fact, the honey stored in the brood-combs is almost a clear gain. Furthermore, the propensity to swarm is considerably reduced. At any rate, that is the way the bees do in this locality.

Knoxville, Tenn.

DOES THE NEW GROWTH OF WHITE CLOVER EVER PRODUCE HONEY?

On page 931, 1902, both you and Dr. Miller want to know if the new growth of white clover ever produces honey. If you mean the bloom that comes after harvest, and away on in the season, just before cutting frosts, I answer in the affirmative. In many fields here and on the roadsides the clover bloom gave a decided whiteness to the landscape. Last fall at times the roads were tempting to those who love the wheel, and for observation and pleasure I took runs to the south, north, and northeast of Aylmer, and I found bees working everywhere on white clover. The honey was thin and ill-flavored, and the bees did not have the power to fix it up. Some sections that were finished with it show clearly the late-gathered clover honey. The bees did not seem to care to cap it, neither in the brood-chamber nor in the sections. But if you mean that which was sown in the spring, then "I don't know," for we scarcely ever sow white clover here. It just comes itself.

SELLING CANDIED HONEY.

During the past winter, Morley supplied a grocer in this town with some candied honey in 60-lb. tins. The grocer, according to instructions, stripped the tins from one lot and placed it in a conspicuous place in a window in his grocery, with the inscription "Pure Clover Honey," in large letters. Well, in a short time that was gone, then another, for a brisk sale sprang up immediately. In a short time that kind of honey failed to appear in the window. A clerk said to me, "That candied honey interferes with the sale of our comb honey so much that I guess we won't sell any more that way until we work off some of our comb."

They cut it into square and rather thin pieces so smoothly and neatly that it is a very different article from honey dug out of a pail. Then the customer wisely reasons

thus: "That honey in the bottle will cost me about four cents a pound more than that lovely candied honey, and the candied honey will look so nice cut up and served in little square blocks."

Of course, some package other than the old-time tin cans will be resorted to another vear.

R. F. Holtermann had sold it by the barrel that way in Brantford. He simply placed it in a large window, stripped the barrel off, and went ahead. S. T. PETITT.

Avlmer, Ont., Can.

[This method of selling candied honey is excellent. I have known of the plan of stripping a barrel off from the candied mass; but so far I do not think any one has suggested the plan of stripping a tin can off from the candied honey and selling it in the stores in squares and slices. It is a good scheme, and perhaps some of our bee-keeping friends would do well to paste this in their hats until the time of selling candied honey comes around next winter.—ED.]

STARTERS, SWARMING, WHY DRONE COMB IS BUILT FROM STARTERS.

I notice in the May 15th issue of GLEANINGS a good deal written by different ones on the subject of starters and full foundation sheets for swarms—some favoring one and some the other. I have had several years experience in bee-keeping in southwest Texas, in Uvalde and Dimmit Counties. I have had some experience with swarming—more this year than any previous. When we have a real swarming season here in Texas the bees swarm, as Rambler would express it, "just any old way." They transcend all the rules laid down in the books, and the most earnest wishes of their manager. The rule to give them plenty of drawn combs won't work here—at least with all of the colonies. I have had colonies this year in double-story hives, with twenty old combs, swarm when they had filled only a little over half the combs in one box, leaving the rest practically untouched with the exception, perhaps, of a little honey in a few of them. I would destroy the queen-cells and put them back; but just as soon as they could build new ones and had time to seal them, out they would come again; and then the old queen seemed determined to get even with me for such peremptory measures, by laying just as little as possible between the times of the first and second swarming. This season I have had as many as ten or fifteen swarms come at once—at least they came so close together that I hadn't time to dispose of them singly, and there would be a general mix-up. In this case nearly all of the queens would be killed. I would have to hive them on queen-cells or open brood.

In these mix-ups I generally put from ten to twelve swarms in three or four hives. I find, if there is a good honey-flow on at the time of hiving, these large swarms will put in a fine lot of honey; but if the honey-flow is lingering or slow I would rather have an average swarm with laying queen, for good result.

I see some recommending covering the hive with a blanket to prevent more than one swarm issuing at once. I have kept back some by stopping up the entire entrance with a board. I am introducing into my apiary the Danzenbaker reversible bottom-board; and as I keep the deep space up during the swarming season, I think I shall make stops of wire cloth to close the entrance of hives that show signs of swarming while another swarm is in the air. This can be done without injury to the bees, as the wire cloth will give plenty of air.

Now as to the new swarm building drone comb from starters. I think the season has a good deal to do with this. If there is a rushing honey-flow at the time the swarm issue, or shortly thereafter, the bees will build a great deal more drone comb than they will when the honey is coming in more slowly, because the queen is not able to keep up with them, and they build for honey instead of for brood. This at least has been my experience. Two years ago we had a fine honey-flow at the time most of my swarms issued; and almost half of the combs built were drone. I used half-sheets of foundation cut diagonally, and in a great number of the hives the open space in the frame was filled in with drone comb. This season I cut the sheets of foundation straight across, as I believe this is best for the brood-chamber. The honey-flow was more gradual, and I find that, in most of the hives, very little drone-comb was built. The bees for the most part have built nice smart worker combs. I find it impracticable to put in full sheets of foundation unless they are wired in, as a heavy swarm will tear most of it down. I have never practiced wiring. When my bees are ready for a top story, I am running them entirely for chunk comb honey.

W. E. RECTOR.

Carrizo Springs. Texas.

[The age of the queen also has something to do with the building of drone comb.—ED.]

GETTING BEES AND HONEY OUT OF TREES OR BUILDINGS WITHOUT CUTTING OR DISFIGURING.

I would go one step further than Mr. Fouch, page 155. When accessible, place a hive containing one or two frames of brood and adhering bees, with caged queen and six frames of foundation, so the bees will work from the colony to be removed, through a bee-escape, as described by Mr. Fouch, letting it remain until the old colony has been destroyed by loss of its working force. Some arrangement should be made to get a supply of water into the old colony so as to supply the brood, else it would die. As fast as the young bees become old enough to fly they are added to the new colony, thus gradually reducing the old one until the old

queen has to quit house-keeping. Now bend a wire so you can run it into the place occupied by the old colony; set the new hive aside, and thoroughly break up the combs of the old colony; insert a short tube in their entrance, and connect it with the new hive where the escape was, so the bees in the new hive can pass through and bring the honey through the tube. By this arrangement you get both bees and honey.

Spring Hill, Tenn. JOHN M. DAVIS.

[Your plan is all right, I think. Another correspondent suggests that, after *all* the bees are out, including those just hatched, the communication to the tree or house, from the new hive, be shut off. If the old entrance be left open, the bees of the apiary would rob out the honey in the tree so that you would get all the bees and the honey, and all there would be left would be the wax or old combs. After the old domicil has been robbed out, the entrance should be closed permanently to prevent some runaway swarm from occupying it again.—ED.]

ALFALFA-GROWERS AND BEE-KEEPERS.

Some of the alfalfa-raisers here in our new honey-fields have suddenly come to the conclusion that the apiarists are a menace to their industry. One farmer reasons that, as I produced last season 15 tons of alfalfa honey, he certainly secured that much less hay, and that it was also wanting in sweetness, which is so valuable as a fat-producer to those who feed their hay to stock. To one prejudiced against the apiarist, this seems a good argument. A few comments on this style of reasoning from one so high in apicultural research as the editor of GLEANINGS will do much to disabuse the minds of these raisers of alfalfa, and thus make the pathway of the humble bee-man less thorny here in the wilds of Nevada.

Lovelock, Nevada. C. K. ERCANBRACK.

[I can scarcely believe that an intelligent, up-to-date rancher or farmer would take the view that his hay crop is robbed of a certain amount of nutriment because the bees gathered from the clover a certain amount of nectar. Why, the nectar was put there by the great Creator for a purpose—to draw insects to mix and scatter the pollen, without which the plants would fail of reaching their highest development. Any scientific man would tell them that, so far from robbing the hay of its sweetness, the bees actually give value for value received. If the rancher is growing alfalfa for seed, his seed crop will be increased very materially from the work of the bees—no doubt about that. While I was on my western trip I ran across farmers of the old-fashioned type—ignorant, and jealous of their neighbors, who tried to convince me that the bee-men were robbing them of a certain amount of nectar that properly belonged to them, hurting the hay. Bosh and nonsense! If the alfalfa-grower were also a honey-producer, there might be some justice in his claims. But some of these chaps are regular "dogs in the manger"—they can't and won't use the nectar themselves, *and don't want any one else to.*—ED.]

QUEENS STINGING HUMAN BEINGS.

It is my usual practice to take queen-cells from cell-building colonies and place them in cell-protectors, when, if the wind is cool, they are placed in my shirt-bosom to keep necessary heat while being carried to nuclei when needed. Recently a queen hatched very quickly from a cell so treated, and, after crawling above my undershirt, stung me twice on the neck, and seemed capable of stinging as often as she cared to. The pain was less than I should expect from a worker. Do queens ever lose their stings when stinging people?

Modesto, Cal. W. A. H. GILSTRAP.

[It is very rare that a queen will sting a human being; but such cases are on record. Mr. E. F. Phillips, who is doing scientific work here at Medina, reports he was stung to-day on his thumb by a virgin queen. He has just shown me the inflamed red spot. The sting, he says, was not quite as painful as that of an ordinary worker. The queen gave him a quick jab, retaining her sting, while he was in the act of clipping her. It would seem from the case you report, and this one to-day, that virgins are more inclined to use their weapon than are laying queens.—ED.]

OLD VS. NEW COMBS FOR WINTERING; HIGH-CHARACTER BEE-MEN.

Referring to letter of C. F. Bender, page 289, "New and old combs, and their relation to winter losses," I give you an experience of mine. In the spring of 1901 I bought two colonies of common bees in old deep-frame chaff hives. I transferred one colony all right by placing the new hive on old stand, with two combs of brood, and the rest full sheets of foundation. But in order to save the brood in old hive No. 2, I placed the new hive on a new stand with two combs of brood—six frames of foundation, and shook all the bees I could in front. I tried to see the queen, but failed. The next day, nearly all the bees were back in the old hive, and soon the others had two queen-cells sealed, then a beautiful queen much larger and handsomer than the other two. This last one was transferred late, I think, in August; and as it was so late I was afraid it would not winter; but it did on six combs, and without any feeding in the fall. Now, the two colonies on new combs built in the summer of 1901 came out of winter quarters (on the summer stands) in good shape; and the one on old black combs, and which was the strongest in bees in the fall, died with plenty of honey left over. Why? I also want to say here that, when I joined the bee-keeping fraternity, I had no idea I was getting into such good Christian company, and am happy to see

that most of our *big* bee-men are such devout and fearless Christians. That letter of Rambler's to Mr. Clemans, page 288, is pure gold to those who, like the writer, have lost loved ones (I should not say *lost*). How any one having been parted from a dear one by death, and having no hope of a future life after this one, can endure the thought is beyond my comprehension.

Stapleton, N. Y. A. D. JACOT.

HOW SALT CURED A BAD CASE OF BEE-PARALYSIS.

I had a case of something develop last fall that I suppose, from the best of my knowledge, was paralysis (I know only what I have read about bee diseases). They would swell up and get to be almost as large as two bees ought to be, and crawl around and die. It seemed that their bowels would become clogged, and they could not void them. Some warm days in winter they would drag out half a pint of bees that would crawl away and die. The brood was healthy.

About the first of March I made some syrup, and put enough salt in it to make a pretty strong brine, and poured a few spoonfuls of it down between the frames on the bees about sundown one evening. Next morning there seemed to be at least twice as many dead ones about the entrance as usual; but in two or three days they seemed to be a great deal better. In a few days I repeated the dose, and in a week it had entirely disappeared, and has not returned. I believe if I had not got it stopped it would have entirely destroyed the colony in a month longer.

I think the reason salt is good for it is that it is a disease of the bowels, and salt is a purgative; and when we get the bowels open and regulated we have no more bee-paralysis. L. C. ROUSSEAU.

Waxahachie, Tex.

SULPHUR FOR BEE-PARALYSIS.

I have just read what Mr. Crum says on page 396 about sulphur and bee-paralysis. Some time ago I wrote to you about the same thing. You advised me to burn them if I had only one. I had six that had it bad. I tried sulphur, and my experience is about the same as Mr. Crum's.

J. S. PATTON.

Havana, Ala., May 14.

MOVING BEES A SHORT DISTANCE.

In your issue for April 15 you spoke of moving bees a short distance. The simplest manner is as follows. The idea was gotten from Mr. Danzenbaker, some years ago, and the reason for the effectiveness is given below:

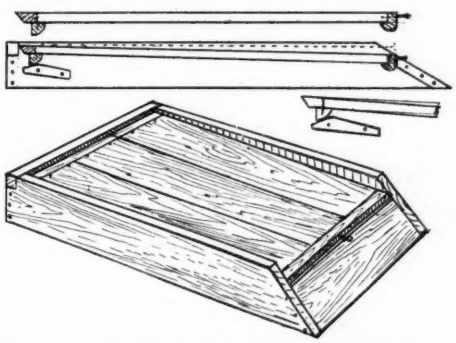
Thoroughly smoke and shake the bees, after all have returned from the field, taking care not to mash them by the too rough handling of the hive. When the bees have thoroughly gorged themselves with honey, and are settled, carry them rather roughly to the new position. When the hives are well firmed and level, set up bushes or plants so thick that the flight of the bees will be broken when they emerge the following day. This is absolutely necessary for success. If the bees are allowed to fly uninterruptedly from their entrances they will not mark the position of their new stand, thinking, probably, all things are as before; but if they are forced to pick their way through interrupting twigs or plants, then they will know that things are not as they were, and, with the disturbance the night previous, will deem it necessary to mark their new location.

ALBERT D. WARNER.

Warsaw, Va., April 20.

ANOTHER TILTING-FLOOR BOTTOM-BOARD.

I see on page 1024, 1902, a description of a new Danzenbaker bottom-board. I have been using a rising and falling floor-board for five years, with great success. My first invention was something like your illustration. It proved to be defective, owing to propolis, ants, weather, and hindrance to workers that fall on the ground. I can see some of the same defects in yours. The next season I made one in which I overcame these defects; and in cheapness and simplicity, and, greater than all, in keeping



down swarming, and inducing bees to enter the super, it excels every thing that I have ever used. I have been working with bees for twenty years.

I send you a model of my bottom-board. You will see that the floor-board is removable by lifting the board nearly level with the top of the side rails, and then gently pull forward. You will note how easily the floor-board comes out without pinching or killing a single bee. The construction of the pivot-blocks keeps the board tight against the back-board in every position. The board can be fastened, if desired, by two screws at the rear for pivots. The beveled edge keeps ants and moth-worms from having any place to hide or making nests, and, like the Hoffman frame, bees can not or do not fasten a sharp edge with propolis as they do a square one. The pinching and killing of bees is also avoided. You will also see that it is not necessary to lift the

hive from the stand when you clean the bottom-board. Pull out the board, clean it off, slide the hive forward an inch or two; and if there is any propolis on the back-board, scrape it off with a putty-knife (right here you will probably see the disadvantage of a grooved back-board). I also believe that the board falling inside of the alighting-board is far better than the projecting one. I have thoroughly tested both. The first tilting board that I made was in 1899. It proved defective. I improved it each year, and in 1901 I called the attention of two mechanics to my invention—this same board that I send you, but not quite so perfect as it now is. JOSHUA FITZGERALD.

Waynesville, N. C.

[Since the illustration that appeared on page 1024 of last year, we have made an important change in the bottom-board in question. The grain of the boards now runs crosswise instead of lengthwise of the bottom. Boards do not shrink or swell lengthwise, and consequently there will be no trouble from that source. The matter of propolis has been entirely overcome through the use of galvanized channel irons, the edges of which come in contact with the inside surface of the side rails of the bottom-board. In general appearance your bottom-board is similar to the Danzenbaker, but it would be more expensive to make, more difficult to pack for shipment, and, as made in the illustration, in some localities the boards would swell to such an extent as to render impossible the tilting feature of the floor-board. But as I understand you, the bottom-board you have used for a considerable length of time did not admit of the removal of the floor, and it is only the modification shown in the illustration that has this feature.

The adjustable entrance is not considered an important feature by Mr. Danzenbaker. A floor-board which will not warp, and which can be removed for the purpose of removing the bees, and for cellar wintering, are the features that are especially prized by him. Perhaps a tilting floor-board is old—at all events, quite a number of our subscribers have referred to it as the device they have used for several years.—ED.]

HOW I STOP THE MIXING OF SWARMS.

I have about 200 colonies, and usually keep about that number during the swarming season. I have a helper, and one or both of us remain with the bees from nine o'clock in the morning until about four in the evening. We stay in front of the bees, which are in five long rows facing the east. As soon as a swarm commences to emerge, run with the smoker and give them a few good puffs of smoke direct in the entrance. If several are coming at once, run from one to the other and back again. Every one who has bees knows how to hurry.

If quite a number of bees get out before you can get there with the smoke it will make no difference—the smoke stops the swarming-note, and they will all return. I then mark the hive, and early next morning I take a new hive filled with empty combs, set it on the stand, and shake every bee into it. I then take all the brood, cut off all queen-cells, slice off all drone-heads with a sharp knife, and tier up six or eight high on a populous colony. As fast as bees are hatched I transfer the combs to supers of other hives for extracting from. When I transfer a colony I give them empty frames in the super with starters. Every thing gives the bees the impression they have swarmed, and you will have no more trouble for the season. I consider this superior to the "shook" method; and as I have never had it fail, and neither have I ever seen it in print, I thought I would give it to the readers of GLEANINGS.

Owens, Ariz. MRS. RALPH BULKLEY.

[But your plan is in reality the "shook-swarm" method, only you wait for the colony to show that it is ready to swarm by actually making the attempt. I think you would save a great deal of annoyance by shaking the bees before they actually begin to swarm.—ED.]

NOT A HAT, BUT AN UMBRELLA SUN-SHADE SUPPORTED FROM THE SHOULDERS.

Several years ago, when I was living in Mississippi, I saw sun-shades made to wear in hot climates. They were fastened to the shoulders, and did not touch the head at all. They were about the size of a lady's ordinary parasol, but shaped somewhat like a wagon sunshade. I have thought they would be a fine thing for bee-keepers in the West where apiaries are worked in the sun. The advantages are, they are fastened to the shoulders, leaving the head and hands entirely free. You can wear a hat under the sun-shade, to keep the head much cooler than when the sun shines directly on the hat. The sun-shade shades the whole body, but should not be made too large to pass through doors easily. Do you know where they can be had? I think you can easily make one if you get the idea. I want one to try this season, and I believe they are just what is needed, as it is very exhausting to work all day stooping over hives with the sun beating down on one's back. W. C. GATHRIGHT.

Las Cruces, New Mex.

[We don't know where such shades could be obtained; but no doubt some one of our many readers could tell.—ED.]

A CRITICISM ON GLEANINGS' MAKE-UP.

On your invitation, "do not hesitate to speak about any thing you don't like," GLEANINGS, p. 227, I take the liberty of a few remarks.

After being twelve years a reader of GLEANINGS I am still as anxious to receive the next number as I was the first month of my subscription. At the end of each year the 24 numbers are carefully handed to my

bookseller to be nicely bound, and then the new volume takes its place in my bookcase.

These few words are enough to prove how friendly are my remarks. Now, then, what I find that could be improved in GLEANINGS is the disposal of pages reserved to advertising-matter. For instance, in last number, March 15, at the beginning are 4 pages of advertising and 11 at the end. This leaves 7 pages which have to stay; 24 numbers multiplied by 7 gives 168 pages, or nearly a volume of no use. If these advertising pages were evenly distributed on each side, the matter would be of no consequence, as they could be easily pulled off for binding.

Another remark, please. Could not the literature be paged by itself? As it is now, when we remove leaves containing advertisements the number of pages jumps so much that the volume looks very incomplete, while it is all right. FRS. BENOIT.

Notre Dame des Neiges, Que., Can.

[In a journal like GLEANINGS it is not practicable to divide the advertising pages so that half of them shall come just before the reading-matter and the other half just after. So far as possible we try to group our advertising in such a way that goods of a kind can be massed together. Periodicals like GLEANINGS and other class journals are usually saddle-stitched; that is, the wire passes through the cover, clinching on the inside sheet in the middle. The journals that page only their literary matter are usually back-stitched—the stitches passing through the series of folded sheets near the back edge, the cover being pasted on. It is possible for such papers to page their literary matter, leaving the advertising matter unpaged. While there are a few like yourself who bind their volumes of trade papers, the great majority read them and cast them aside.—ED.]

HOW TO LOCATE AND KILL LAYING WORKERS IN A COLONY.

Dr. C. C. Miller:—I have read in the March 1st issue of GLEANINGS that Mr. C. M. Aarons can not get a laying-worker colny to accept any kind of queen. I had a colony that I worked on her over three months, and I could not make her accept a queen nor raise one from the combs containing eggs that I put into the hive. I made the following experiment, and it gave me fine results; and from now on, whenever I have a laying-worker colony, I play the "trick on them." Please tell Mr. Aarons to try it and report if he succeeds.

I take the laying-worker colony away from its place, say about fifteen or twenty feet, and place a new hive where the laying-worker colony was, leaving the old hive-bottom under the empty hive, and then I smoke all the bees out of the laying-worker colony. They surely all go where the old stand is, and then they will accept a queen or raise one if you give them combs with eggs. You will notice that, when you have smoked all the bees out of the laying-worker colony, there will remain two or three places of the hive (that depends on how many laying workers were there in the hive), bees clinging one to the other, and you can be sure they are there. The laying workers can not fly, as they are rather heavy, but they can not be picked out from among the working bees; and then I kill all the bees left in the old hive. I may destroy some of the working bees, but I get rid of the pest. J. E. LARRONDO.

Sagua la Grande, Cuba, May 16.

[This method of locating or identifying the laying workers is new so far as I know. I commend the treatment to any one who is troubled with any thing of this kind.—ED.]

A SMOTHERED SHIPMENT OF BEES.

We received a shipment of bees a short time ago from the other side of Cleveland—2 colonies by freight. They were strong enough to swarm (some of them) before shipping. The shipper nailed them up what we would call air-tight, making no provision for ventilation except 1¼-inch hole in the bottom of the hive, a few having holes in the gable end of cover. They were on the road about five days. The strongest colonies arrived as dead as a door-nail; the rest nearly gone up, only the weakest being in any kind of shape. The brood in all is scalded or dead. We gave instructions to shipper to cover top with screens, which would have brought them through all right. Had the weather been at all warm, all would have perished. We give the above to show the idea that some people have as to the requirements of bees when shipping.

Parkertown, O. H. G. QUIRIN.

[The shipper in this case should be made to suffer for his own folly—that is, his failure to follow your instructions.—ED.]

LIPPIA NODIFLORA; WHERE TO GET IT.

The experiment station at Tucson, Arizona, is co-operative; i. e., it is principally supported by the general government, hence a citizen of any State will be supplied with a trial supply of lippia nodiflora free of charge upon application. In March last they sent me a nice lot of plants. Every one grew, and all are beginning to bloom, and are running freely.

Corona, Cal., May 9. H. M. JAMESON.

OLD COMBS VS. FOUNDATION FOR BEES.

I was reading an article on p. 443 from Reginald C. Holle, which I don't quite understand. I think from the way he talks that the old combs were all solid pollen, and the queen would not lay in them. I never had the queen leave the old comb and go on foundation. I have taken foundation, all built out, and put it in with old combs, and the queen would lay in the old combs first. ARTHUR HEINKEL.

Mauston, Wis.

THE CABIN IN THE WOODS.

About the middle of March I felt very anxious to get back to our cabin to see to my peach-trees, and to prepare the ground for planting potatoes, etc. Mrs. Root was not quite ready to go; and I really hope you will excuse me for not telling just *why* she was not ready to "share my bed and board" at the cabin in the woods. However, I think I may venture to say that, just *23 hours* after I started off alone, Rootville was rejoicing over the advent of another member of The A. I. Root Co. Mrs. Boyden (perhaps better known to our older readers as "Blue Eyes") is now the mother of *two* promising boys; so there are now not only five children but five *grandchildren*. When the older members of the firm get worn out, and have to be "turned out to grass" for a while to recuperate (sent up to the cabin in the woods, for instance), you see there is a prospect of young blood coming in to bear the burdens, like young bees hatching out day by day in a well-regulated bee-hive. Under the circumstances it was deemed best that I should try to get along for two weeks in taking care of myself. Now, while there alone on my ranch I met several of my happy surprises. One was to see the crimson clover I sowed the first week in September budded and blossoming gloriously. I sowed it where I dug 45 bushels of New Queen potatoes. Down here in Ohio I have recommended that crimson clover be sown in July or August; but up in Northern Michigan you can sow it as late as September. One reason I did so was that frost never heaves clover out, nor any thing else, in that locality; and I was very agreeably pleased to find not a plant, apparently, of the crimson clover missing. It may have been a favorable winter — I do not know. The crimson clover commenced blossoming the fore part of May; and by the first of June it was, in spots, the prettiest sight for a clover-field I ever saw anywhere. Perhaps I had better tell you it is the first clover I ever attempted to sow broadcast in my life. Of course, I got it too thick in spots, and too thin in others; and I was so poorly satisfied with my skill in sowing clover that I bought a machine right away afterward. Well, where I got the clover the thickest it seemed to do the best. The first day in June the crimson heads were so close there were spots where there were *solid beds* of crimson; and the Italian bees were humming over it, as well as bumble-bees, as I never saw them anywhere else. The plants do not branch out nor grow as tall as they do in Ohio; but there was an immense amount of green stuff for feeding stock or for turning under. It would seem as if the clover standing now, on a square yard, would be all a man could carry. If it were not among the peach-trees I would try to plow under a little piece to see what it would do for potatoes. Perhaps I may do so yet.

Now, friends, here is a wonderful chance to get fertility. Plant your potatoes so that they can be dug and got out of the way by September 1, and you can grow a magnificent crop of clover to be turned under for *more* potatoes (or any thing else, for that matter), providing you do not plant your potatoes until, say, about the middle of June; and I think most potato-growers in the Grand Traverse region have decided that is the best time to plant. Perhaps the soil does not average as well as that around our cabin. In fact, I am pretty sure of this. The timber on our place is mostly beech and maple, with a sprinkling of hemlock. I have before remarked that it is the fashion in that region, after the woods are cleared off, to grow potatoes year after year for I do not know how long, without turning under clover or any green crop at all — at least, this is largely the fashion. They do not want to spare the use of the land; but with this crimson clover you can turn under a tremendous lot of clover, and grow potatoes every year right along. Why, if I can do the same thing again (and I do not know why I can not) it just makes me full of enthusiasm to think of it. I know crimson clover has been pronounced a failure; but I have grown it successfully for six or seven years here in Ohio, without one failure, and I have grown one crop in Northern Michigan, as I have told you. Why, I would give a lot to have the readers of GLEANINGS see that growth of crimson clover.

ANOTHER OF MY HAPPY SURPRISES.

A year ago I mentioned that our good neighbor Mrs. Cole brought us about a dozen bunches of pansies. She said they were all different. We had a gorgeous display of pansies all through the summer and fall. Mrs. Root first said the blossoms would have to be picked off so that the plants might not exhaust themselves in growing seed; but when the roots got down to that rich woods dirt it was just out of the question to pick the blossoms, so they went to seed and grew a lot of it. Now, in sowing my crimson clover, when I got up near the house where the pansies are I did not intend to sow any; but the seeds flew over, some of them among the pansy-plants. Well, this spring little pansy-plants were peeping out for a rod or two in every direction. The wind or something else carried them also clear over among our strawberry-plants. Well, just about the time the crimson clover and strawberries were coming in full bloom those seedling pansies were peeping out here and there in every direction. The effect was wonderful. Every man, woman, and child who came near the cabin uttered exclamations of surprise to see the various-hued pansies, no two alike, glittering and gleaming out from among the clo-

ver and strawberry foliage. Why, they were "too comical for any thing," as the little girls say; and the funny part of it was, every last pansy, big and little, turned its face toward the front door of the cabin. You see they were all on the north slope above the cabin; and in turning their faces toward the sun it seems as if they took particular pains to face the front door. The boys who work for me told about it, and the little girls in their homes came up to see our pansies and crimson clover, and they told their mothers, and their mothers came; and yet all this gorgeous display of beauty came unexpectedly. It was indeed a "happy surprise." Just north of the cabin, on the hillside, I planted six plants each of twelve different varieties of strawberries. They were sent me by Mr. Matthew Crawford, of Cuyahoga Falls, O. I took care of them myself last season, and the raspberries and other wild plants of the woods were so determined to grow up among those strawberries that I began to think along in the fall I should hardly get my money back for all the time I spent. In fact, I was a little disappointed at the growth the strawberries made. I remember thinking that perhaps there was a little too much clay in the sand on that comparatively hard and stony hillside. Besides, it was so full of roots of trees from stumps that were too green to dig out that many of the weeds had to be pulled out by hand. Well, this spring that strawberry-bed was another of my surprises. The foliage was not only larger than any thing I had seen before, but the blossoms were large enough and handsome enough to make beautiful bouquets; and while the frost down here in Ohio for a long while gave every strawberry-blossom "a black eye," up there in the woods there was not a blossom, big or little, spotted by the frost; and when I left there, June 1, the long stems of fruit were lopping down in every direction, under their loads of great green berries. I shall have to tell you later the outcome.

By the way, this suggests to me that some of the finest results with strawberries I have ever seen were on new ground, where the woods had just been cleared off. This new ground is nice for potatoes or any thing else, but seems to be specially suited for great crops of strawberries.

Now I want to give you another short chapter that perhaps might belong under the head of Our Homes.

There are many homes in our land, entirely under the charge of men-folks—sometimes temporarily, and, again, right along. A good many times it is very desirable that the good wife have a vacation by herself. Very often there seems to be no way for the husband but to keep bachelor's hall. It is hardly worth while to think of hiring a woman or cook of any kind during the temporary absence of the wife. Just now it is hard to get help anywhere, outdoors or in; but a man who works on the farm needs to be well fed. He may not only lose money by being on scant rations, but he may lose health and possibly life. Think of poor Rambler. Now, I hope I may be able to give some helpful suggestions. If you can not have a woman or anybody else cook for you, you can afford to have the best of every thing that is to be found in our best fancy groceries in the large cities. A good square meal in a city hotel or restaurant costs about 50 cents; but the food that the average man requires three times a day probably does not cost 10 cents — sometimes not over a nickel. The difference between this and half a dollar is to pay for the cooking expenses, for the various dishes, rent of a convenient room on the street, taking care of the institution, etc.; therefore the man or boy who does his cooking can have plenty of the best of every thing, and still make money. You can well afford to have not only all the butter, eggs, and milk you want, but you may have potted chicken, boned turkey, canned fruits, vegetables, etc., without feeling you are extravagant.

A year ago I spoke of getting along with only a few dishes—that is, where you board yourself. A part of the time during the last two weeks I had helping me five men and boys, and two teams. I chose to set all these people at work so as to get my plowing and planting done quickly, and get back here to Medina. I had not much time for cooking, so I began to study the matter; and I want to tell you of one little invention of mine that I think may be helpful to the women-folks. Perhaps they will smile when they are told their old friend A. I. Root presumes to teach *them* how to cook. Wait a minute. I have often told you of my fashion of drinking water hot instead of cold. I have told you of how I would sometimes gladly give a dime or more for a drink of hot water when I am in a hurry. Well, for years I have been in the habit of having in the summer time things handy so I could get this hot water myself. First I have a little coal-oil stove that cost perhaps 50 or 75 cents. Then I have a quart tin dipper, made of the very thinnest tin that can be found. The thinner the tin, and the less cold metal there is in it, the quicker it will heat over a coal-oil or gasoline flame. I pour into this dipper just the quantity I want to drink—not a spoonful more. Then this is heated over the flame, either coal-oil or gasoline. In the winter time I often heat it by pressing the round bottom of the dipper on top of a hot stove. With this thin tin pressed close to the top of the hot iron of the stove, the water will boil almost instantly, so I do not have to "wait for the water to boil," when I am in a hurry. Well, I had this arrangement in my cabin. One day in a great hurry I thought I would try cooking an egg in the tin dipper. This dipper is made of pressed tin. There is no seam in the bottom. It is round, like the bottom of a wash-bowl. Let me digress a little here.

Years ago, when I was making candy for the bees I had much trouble in having the

sugar burn around the sides of the utensils I cook it in. One day I happened to be on the fairground where the candymakers were at work. I noticed they had a little fire made of charcoal. Their sugar and water were in a copper dish with a round bottom. The dish was large enough so the heat from the charcoal fire could be applied just under *the center* of the pan of syrup. The outside edges were far away from where the heat was applied. In this way they made the hot sugar boil rapidly, without any burning, because the copper boiler was 1 arge enough to be cool all around where the heat was applied. I have been thus explicit because it is quite important to understand how it is we can cook a variety of things nicely without any burning around the edges. Now let us go ahead.

I put a piece of butter in the tin dipper, say half the size of a hickorynut; then I held it above the flame of the lamp until the butter was melted, and about as hot as it could be without burning around the edges, applying the heat, of course, to the center of the bottom of the dipper. Then I broke an egg and dropped the contents carefully in the melted butter. Now, by holding the dipper in my hand, and varying the distance between it and the flame, or, if you choose, turning the flame up and down, I found I could cook an egg beautifully in three minutes by the watch; and to prevent it from sticking to the bottom of the dipper I kept constantly shaking it around. In fact, after it was cooked it would slip out of the dipper itself on my plate. If I wanted an egg turned over and cooked on both sides, it took about four minutes. After the egg was cooked I could fry enough sliced potatoes for one meal nicely, in about the same time I cooked the egg; and in the same way I warmed up or cooked a variety of articles. When done I took a piece of soft bread and wiped out the butter from the clean bright tin. Lastly, I gave my dipper a good rubbing with a piece of soft newspaper, when it was almost as clean as when I commenced. A very little soap and hot some water made it perfectly clean, and at the same time furnish dishwater for the rest of my dishes.

Now, may be the mothers in many of our homes, who have been absolutely obliged to economize time, know all about what I have been telling you; but I am just egotistical enough to think that my plan as given above is far ahead of the way in which the average hired girl operates. I did not waste any food, and I did not have any dirty dishwater. I cooked a good wholesome meal, and had every thing put away, and the table slicked up, in not much more than half an hour. In the way of fruit, I had excellent canned strawberries that Mrs. Root put up last summer. For drink I sometimes used milk; and when I did not have it handy I used malted milk. If I wanted a cup of tea for a change I could have boiling water with my tin dipper in less time than any other apparatus for the purpose I have ever seen, and the dipper was always bright and clean until—I do not like to tell the rest of it, but perhaps I had better. When I was cooking an egg one day I had got it to going nicely when one of my boys came to the door to ask about the work. I thought I could tell him before the egg would take any harm; but I am afraid, as a result, I shall have to invest ten cents in a new dipper—that is, if I want to have one that looks as comely as my old one did for many months.

Thou hast been faithful over a few things, I will make thee ruler over many things: enter thou into the joy of thy lord.—MATT. 25:21.

From very early childhood I have been interested in the matter of flying-machines, especially with the idea of having a machine that would fly without the aid of a balloon; and I was a good deal disappointed when I read in the *Scientific American* (I think I commenced reading that periodical when I was about twelve years old, and I have read it pretty thoroughly ever since) that there was no force yet known to mechanics capable of exerting a power or force in proportion to its weight so as to fly like a bird; and I do not know but this may be true even yet. All the machines and air-ships I have seen described have depended on a bag filled with hydrogen gas to buoy them up while the engine and propeller-wheels pulled it against the wind or the reverse.* I do remember, however, that some time between 1850 and 1860 somebody suggested there *was* one force known to mechanics, of sufficient power to move a flying-machine—the explosive force of gunpowder; and as a proof he suggested the sky-rocket, which flies not only to a great height, but

* Perhaps I should add right here that I am well aware there are floating or gliding machines that, when started at the top of a hill or high cliff, will float as a hawk or other large bird floats a long time on its outspread wings without giving them any motion. It has been said that, when we get a successful *floating* machine, we shall have mastered the question of *flying* machines. A few weeks ago while at Miami, Fla., a strong wind was blowing from the ocean against a sloping bank of sand. This sand-bank diverted the wind so as to make an ascending current. A great lot of crows and other large birds had found this ascending current of air, and were having quite a frolic by letting it keep them suspended without any motion of their wings whatever. Yes, the current would occasionally raise them bodily up away from the earth. They learned by what we might, perhaps, call instinct, to shift their wings and tails so as to glide down hill in the direction from which the wind comes—or at least it would seem they were going down hill, but in reality the ascending current keeps them up, and sometimes raises them still higher. I figured this problem out in my boyhood, when the question was discussed as to how these floating birds could keep up in the air without any flopping motion of their wings; and if I am correct they never do this—in fact, they can *not* do it unless they hunt up a spot in the great ocean of air above us where there are ascending currents.

with incredible velocity. The *Scientific American* replied, however, that, although many experiments had been made to produce an engine moved by the explosive force of gunpowder, there were very great objections, not only in the way of danger of such an apparatus, but the accumulation of soot and acids that would rust and corrode the machine. After the discovery of kerosene, however, and the low price at which gasoline and benzine were produced as by-products, the matter of producing mechanical power by "explosion" was revived. In 1876, at the Centennial Exposition in Philadelphia, I saw an engine moved by exploding a mixture of common coal gas and atmospheric air. The explosion lifted a great chunk of cast iron two or three feet high. In falling it moved a balance-wheel; and when it came opposite a point near the bottom, another explosion gave it another hoist, etc. It was a great curiosity to a great many people besides myself. I was then 36 years old. From that time to this, inventors have been at work on gas-engines. If a little gasoline is allowed to evaporate in a close room, and the gas thoroughly mixed with air in the room in just the right proportion, it will blow up the room like a charge of gunpowder. But while the gunpowder would leave a lot of foul smoke, the gasoline mixture leaves almost nothing. In view of the many accidents and deaths resulting from explosions of this kind, the world at large can not be told too often of this matter. Scarcely a day passes but that we read of somebody who smells escaping gas in the dark, and then *lights a match* to see where the leak is.

Well, friends, you all know more or less by this time about gas-engines. That first machine in Philadelphia was constructed with the idea that, after the explosion, it would take a little time, say a quarter or half a minute, to get up some more explosive compound and touch it off. Our gas-engines now fill the cylinder with just the right proportion of air and gasoline, and touch it off by means of an electric spark a thousand times a minute, if I have made no mistake. Why, these little motors fairly hum until the sound of the repeated explosions almost makes a musical note.

A few days ago it was my pleasure to visit Cleveland in order to see a new automobile that was sold at only $375. I took my seat beside the operator on the public square, right in the heart of the great city. It was in the middle of the afternoon, and the streets were filled with electric cars and vehicles of every description. My companion made his little machine (for it looked little beside the big vehicles of its class) dart in and out in front of street-cars, right before horses going at a rapid rate. He turned corners so abruptly that I had to cling to the seat to prevent being thrown out. Then he stopped so suddenly I had to cling in a like manner for fear of being flung over the dashboard. Come to think of it, however, there was not any dashboard, for it was a "buckboard" automobile. Then when he got a little out of the crowd, in the suburbs of the city, he began letting the thing go, for it seemed like a spirited young colt that only wanted to be let loose. All this was done with the gasoline-engine I have been describing.

At one point, when we were going at a pretty good speed, something needed both of his hands for adjustment, and he asked me to take the steering-lever for a minute. Perhaps he thought I was used to handling such a machine; but I believe it was the first time in my life I ever "held the reins" of an automobile. In an instant, almost, the machine threatened to go into the ditch; but I brought it around in time, and, as might be expected, in my eagerness and fright to avoid the ditch I whirled it around so abruptly that it looked as if I might go into one on the opposite side. Pretty soon I got the hang of the thing a little, and made it go straight in the middle of the pavement. A city ordinance forbids running faster than 15 miles an hour; so each driver has to watch and see that he doesn't go faster than a quarter of a mile in a minute. My companion said he could easily go 30 miles an hour if the city would permit it. And now I am coming to the point of my story.

I said to my friend, "What do you suppose would happen if a drunken man, or a man partly drunken, would get hold of an automobile?"

"Well, we have had some such cases; and if there did not happen to be a policeman to arrest him promptly, he might be the means of destroying property, and perhaps many human lives, in just a second or two."

It is a bad thing, friends, for a drunken man to get hold of a high-spirited horse; but it would be ever so much worse with an automobile. When I had hold of that lever for just a few minutes I had a vivid conception of the way one feels when he not only guides one of these machines, but when he feels that almost unlimited power and speed are ready to do his bidding. In the Arabian Nights we are told of the powerful genii that were ready to perform herculean tasks at a simple wave of the hand of the possessor of the magic lamp. For centuries people have laughed at these idle tales, but now it seems as if they were coming to pass. This new mechanical force of many horsepower is untiring. When we have a long journey to make with a horse, we watch him to see how he is standing the journey; and every good man and woman is very careful not to task him beyond his strength. Toward the close of the trip we say, "That horse is too much used up. He ought not to go another mile to-day." Now, it is hard to get over this feeling when you are riding in an automobile. You can hardly comprehend that, so long as the tank contains gasoline, the machine is as ready to bound ahead in response to the movement of the lever, after it has run one

hundred miles, as it was in the morning. The iron and steel may wear out, but they know no fatigue.

Just at this wonderful stage of invention there is some clashing between the owners of these machines and people who drive horses, especially the farming community. There is an excellent chance to exemplify Christianity and a Christlike spirit on both sides. While Ernest and I have been exceedingly careful in riding through the country, there has been one or two who condemned us and our machine in pretty severe terms. The horses have not yet learned about the new conveyance, but they are fast learning. A great many of their owners pleasantly insisted that we go right ahead while they *make* the horse behave himself and teach him that the machine is all right and not to be feared. Very likely some of the drivers of automobiles are overbearing. In the first place, the machines cost a lot of money — from $500 to $2000 or even $3000. The man who owns one, quite often (if not always) feels a little proud to display to the world the fact that *he* has money enough to go in company with millionaires and bankers and other men of capital. Then he is apt to feel proud of that wonderful power subject to his control. There is a great temptation to induce the people to rush out from their homes, and stare as he goes flying through the streets or over the country roads. There is a responsibility resting on the person who runs an automobile. If he is a professing Christian, an additional responsibility rests on him. Mrs. Root objects to having one or riding in one, just because it is likely to provoke ill feeling. Now, this is hardly right. While taking that ride in Cleveland there were automobiles coming and going all the time. Sometimes half a dozen would be in sight at once. We must have passed forty or fifty in just one hour's ride. They were driven not only by gasoline but by steam, and some by electricity. They were delivering merchandise about the city, and doing business of almost all kinds. It would be foolish for the masses to condemn automobiles just because they are at the present time mostly in the hands of the rich.

Dear reader, I have given you a little glimpse of the responsibility that rests on one who owns one of these machines. I have given you a glimpse of the temptations that beset the fortunate possessor of one. I have suggested to you the importance of having calm, sober, clear-headed men — yes, and women too — who have the love of Christ in their hearts — who have kindly feeling toward their fellow-men, who love even their enemies, and rejoice in an opportunity of doing good to those who hate them — that is, if there are any such. We want such people as these, if they are to be found, to run our automobiles, our electric cars, our locomotives, steamboats, and all these things. Where shall we find them? Every town and city in this whole wide world is searching for honest sober men who have wisdom and understanding. The papers are now giving us accounts of the shame and disgrace that are being revealed in one city after another in the way of public administration. It would almost seem as if honest men were not to be had at any price, to be intrusted with responsible positions. The proprietors of great factories are hunting for men who can be trusted. Hundreds apply for places, and the most of them do pretty well; but where can we find men for foremen? Oftentimes we find a boy who seems to be so conscientious and industrious that we decide to give him charge of the work in a certain room or department. Sometimes I, the senior member of our firm, shake my head, and say, "The boy is too young. It will hurt him, and hurt those who are under him, to put so much responsibility on him all at once. Wait till he is four or five years older." But perhaps the regular foreman is sick, and somebody must take his place at once. This boy knows more about the room than anybody else, and his record is excellent, and we conclude to try him a while. If I am around I usually have a talk with my young friend, and tell him of the dangers. Oh how many mistakes and painful things might be saved if some older person would talk to these boys, and drill them a little when they are suddenly pushed into places of responsibility!

Now, you can not all have the job of running an automobile or a locomotive or an electric car; but, dear friends, almost every one of you whose eyes rest on these pages is carrying a like responsibility *somewhere*. You do not know it, and perhaps you would not believe it, but it is true. You are on trial before God and your fellow-men. You say, "O Mr. Root! you do not know how I am fixed. You do not know how I am cramped, and shut off from the big world; you do not know how I have tried loving my enemies and doing good to those who hate me; you do not know how utterly useless such things are with the people who are around me."

But, my friend, I *do* know. You are not reading your Bible enough; and you are not patient enough in following its precepts, or you would not find things in that shape. The great wide world is watching and hunting for those who are faithful in few things. The great business world is looking for the boy or girl — yes, for the men and women — even those who are well along in life, who can be trusted with responsible positions. While taking that ride in Cleveland I saw a man who must have been between seventy and eighty years of age, on the street, sweeping up the droppings from the horses. If that man does his work faithfully — if he can be trusted out of his employer's sight — if he uses not only his muscle but his brain also in making himself useful, in caring for the streets of that great city, he will be promoted, and get better pay. I do not think there ever was a time before when faithfulness in few things was so sure to

bring its reward and to enlarge the sphere of activity (and the *wages*) of the one who is faithful. Have you longed for more opportunities? have you wished that you had a little more *power* that you could bring to bear when things are moving so slowly? Well, the promise of our text is true. God and your fellow-men are measuring you; and as fast as you can bear more responsibility you shall have it. Every little while I run across some boy or girl who has made a pretty good record, and people are beginning to bid for them. Everybody is surprised at the salary they are offered. They say, "Why, that man is not worth any such money as that — he can not earn it." But pretty soon some other institution gets its eye on him, and he goes higher still. Then is the time that this person wants to be careful about getting—I should like to say the "big head," but I do not like the expression. Then is the time when this person is in danger of losing his Christianity. We should think that, with promotion, he would thank God and be more regular in his attendance at the prayer-meeting, and other religious services; but too often it is the other way. O dear friends, let nothing tempt you to forsake the religion of your fathers—to forsake that good old Bible from which I have taken my text. Let nothing tempt you to forget how God answered your prayers when you were humble and meek. "Blessed are the meek, for they shall inherit the earth."

DIVINE HEALING, ETC.

Bro. A. I. Root:—One year ago a preacher from a northern city settled here who claims to be sanctified. They (himself and wife) go by the name of divine healers—that is, they claim that, through God, they have power to heal all bodily diseases, no matter of what nature they may be. They have built a very fine church, but claim that no man must have his name on the church-book They say that, after a man is once converted, it is impossible for him to sin. He will not attend our churches, and claims our ministers do not preach the gospel. He does not believe in medicine, and says it's the Devil's work. Bro Root, will you please give us your views on the above matter through the columns of GLEANINGS?

Grove Hill, Va. C H. MAY.

Friend M., if I am correct, this matter of divine healing has puzzled not only philanthropists but some of our best doctors of divinity; and perhaps no better advice can be given to the world generally than the old text so much quoted: "By their fruits ye shall know them." When our Savior went abroad through the world healing the sick and casting out devils, good fruit followed his work. There never was any question about it, and I admit that for a time it seemed as if good and nothing but good was coming from the work of some of our divine healers. I think we should, however, always regard with suspicion any person or organization that leads people away from orthodox churches. Our older readers all well know that I for a time strongly upheld Dowie. When he began his attack on "doctors, drugs, and devils," I think that every good man and woman must have felt that he was in the wrong. Of course, there are doctors and druggists who might with some propriety be classed with devils; but he certainly is not warranted in his wholesale denunciations of the physicians of the world, nor in saying that our sickness is the work of the Devil. Very likely when you see this in print you can tell us that the church you describe is losing its hold on the people.

KEEPING POTATOES OVER WINTER IN THE TRAVERSE REGION.

Some time last July, when our potatoes in Medina were all too badly sprouted and wilted to be really fit to eat, I visited my neighbor Hilbert, and found they had Russet potatoes just as dry and mealy, and just as nice for the table, as at any season of the year. I was surprised, and asked how he managed to keep them in good order till July. He said he did not manage at all, but just kept them down cellar. Then I asked him if he did not open the outside door nights, and close it daytimes. His wife replied that the outside door had been open day and night ever since there was no danger of the potatoes freezing. I requested permission to take a lamp and go down and examine the potatoes, and see the cellar. I found the outside door (on the north side of the house) wide open; but the bin where the potatoes were kept, right on the ground, was in a remote corner of the cellar, behind some central bins, so that no light and very little warm air got near them. The place was both cool and dry. The potatoes were in nice condition for either table or market. I think the sprouts had been rubbed off just once. I asked him if it would not pay big to keep potatoes in this way to be sold on the market in July, or when new potatoes are at their highest notch. He said he had often done this, and got a bigger price for them than at any other season of the year.

Well, I made up my mind then and there that I was going to have a place to keep potatoes that would do it successfully without the fussing to open and close doors, etc. Well, my friends, I have it, and am "happy." I have told you something about our barn with stone underpinning. At one corner there is a large outside door, wide enough to run in the wheelbarrow handily. To get the wheelbarrow to run on level ground, we dug a sort of ditch or channel. This answered also for drainage for the cellar if any water should come into it by hook or crook. As we have eavespouts on the barn I think no water has ever got in.

Well, the cellar is not *all* dug out; but we dug a narrow room, say six feet wide, deep

enough so one could stand up and push a wheelbarrow, and then turned a corner under the barn, so that it would be dark and cool, even if the outside door is wide open. I stored in this cellar under the barn twenty bushels of potatoes, of different varieties, and the most of them in potato-boxes; and as I was afraid of its freezing, the boxes were set in on the ground floor, one tier deep. Old boards were laid on top of the boxes, and then a layer of corn-fodder, carefully removing every nubbin of corn so that we might not bait rats and mice. On the corn-fodder we placed two or three inches of dry dirt; then a lot of bean straw, perhaps six inches deep; over this a large sheet of enamel cloth which we used to spread over piles of potatoes in the field.

I took all this precaution because the barn is a rather open structure. I put on the bean straw because I did not want my enamel cloth to lie on the ground, for fear it might injure it. The potatoes wintered beautifully. When opened up during the last of May they were just as dry, and the late varieties were almost as free from sprouting, as when they were placed there in November. The extra-early varieties had pushed out sprouts, especially those around the outside edges. For table use, June 1, they were just perfect; and as I did not plant all of them, the five or six bushels still there will, I think, keep till the first of July in the same way. This plan is better than burying them outdoors, because the barn shades them, and keeps all water off. The year before, we had some buried outdoors; but they got to sprouting quite badly by the last of April. I am satisfied that, where potatoes are buried outdoors, they will keep ever so much better if protected by some kind of cheap roof so heavy rains can not soak down to the potatoes.

At the present writing (June 13) we find it *here* a very hard matter to keep potatoes in good order for table use. My impression is, it is next to impossible to have potatoes keep here as they do in Northern Michigan. I do not know exactly why, either; but if this is true, potatoes had better be wintered over in the northern regions, and kept there until they are wanted, and then shipped to our large cities, say in May, June, and July. Why, just look at it. As we go to press, old potatoes are quoted in the Cleveland market at 90 to 95 cents per bushel; new potatoes, $1.50 to $1.75. Nice old potatoes may go still higher before new ones get low enough to let them start the other way. Of course, the recent floods in the South have had much to do with cutting off the usual shipments of early potatoes for the Northern cities; and this accounts for the shortage and high prices on both old and new potatoes. Well, now, if a grocer had a few barrels of old potatoes like those I have described, wintered in Northern Michigan, to set outdoors on the sidewalk by the side of the new potatoes that he is obliged to charge 50 or 60 cents a peck for, I think the average buyer would take the nice firm old unsprouted potatoes, even if the price were the same. Why, there is here a tremendous margin and a tremendous profit.

I suppose cold storage would be a great help in keeping old potatoes in nice order. I have been watching the market for years past, just at the time when new potatoes and old were beginning to compete with each other; and I am sure there is a good chance right here, not only to make money, but to furnish the world with a good wholesome quality of this great staple food product. If you take notice, new potatoes are held at a dollar a bushel or more for quite a long while after they first make their appearance in the market. At $2.00 a bushel I could *almost* grow potatoes profitably, started under glass. But keeping old potatoes in a good state of preservation along the lines I have mentioned will be much easier than growing new ones extra early.

AN AUTOMOBILE TRIP THROUGH MICHIGAN.

Michigan is a big State, and there are lots of good people in it. I judge so from the fact that over 800 of them are taking GLEANINGS. I was about to say they were reading Home Papers, but that may not be true. While I have greatly enjoyed the glimpses of the great State while riding through on the cars, I have for several years considered the matter of taking a trip with a horse and buggy, all the way from Medina to the cabin in the woods. But no horse could hold out the way I want it to do; for when I get really started I want to be up about four in the morning — that is, when the days are long enough, and travel until seven or eight at night; and when it is moonlight, perhaps do some traveling in the evening. The horse would need rest; but the automobile, with plenty of gasoline knows no fatigue. Perhaps I am mistaken about this; and if so, my visit with you may be a little longer. But I was planning to visit a great many homes in the course of a day, stopping, say, fifteen or twenty minutes and get a glimpse of your home and its environments. If you have any beautiful springs near by, flowing wells, or, say, " happy surprises " in the way of high-pressure gardening, I may decide to stop an hour or two. Just now I am reminded that, years ago, I decided I would be very careful about telling what I am *going* to do, because so many times the thing I had planned did not come to pass. Well, the only reason I mention the matter now is that you who are located somewhere near the line between Toledo and Traverse City might, if you feel like it, say on a postal card that you would be glad to see the editor of the Home Papers. Now, I can not promise to call on *all* of you; but I will try to look in on as many as possible. I may go one way one trip and back again on a different route. Will Mrs. Root go? No. She says she knows by experience that she never could stand flying about from one

point to another (with hardly time to eat and sleep) the way I usually do when I am visiting. You can address your cards to Medina or to Bingham, Leelanaw Co., Mich. They will reach me in due time either way.

CAN A MAN BE BAPTIZED WITHOUT BECOMING A MEMBER OF ANY CHURCH?

Mr. Editor:—I am now in trouble. I thought GLEANINGS was published strictly in the interests of bee-keeping, and no sectarian or orthodox religion, and no partisan politics were admitted into its columns, not even questions of political economy, when these questions gravely affect the prices of our honey.

On pages 782 and 824 brother A. I. R. gives us advice concerning our duty in attending church, and on pages 800 and 801 Dr Miller and the editor give us another lecturing. Now, I know I can't reply to these different articles without starting up a religious discussion that would not be permitted; but I am in trouble, and desire to ask all you brethren what I shall do.

Up to some six or eight years ago I was guilty of using profanity. I tried to live honest all my life—really had an innate desire to practice the golden rule, but I sometimes was guilty of taking the name of God in vain. At last I became convicted of my besetting sin. I looked around me, and saw that all other sinners could give an excuse for their sins. The drunkard could give as his excuse that he liked the taste or effect of his "dram." The gambler gambled because he liked the sport; but for my sin there was no excuse under the heavens. It seemed that I was convicted. I decided to live a Christian life I began to read my Bible as I never had before I soon discovered that it was my duty to be baptized, and that immersion was the ancient mode I soon discovered that the orthodox denominations did not give us the great depth of meaning attached to the ordinance of baptism, but I wished to consecrate myself to Christ, and to have that consecration witnessed by baptism. I applied to a missionary Baptist minister, and asked him to baptize me. He told me he could not do so unless I would join his church. His church teaches some things that contradict the plain statements of the Bible, and make Paul's words, "attain to immortality by patient continuance in well doing" meaningless. They have some things in their creeds that I can't indorse. So, to join that church simply to obtain baptism I would be acting the hypocrite.

I am in earnest in this matter. I can't afford to be dishonest with myself on so important a matter as my own salvation. What am I to do? Can't some of you brethren tell me? Seeing the matter in the light I now see it, I could not join any orthodox church without violating God's command to "come up out of her (Babylon), my people." Of course, I can't give the scriptural proof of the light I now see, without starting a discussion on this question. I am asking for light—for help. I can't understand that any orthodox denomination preaches the great depth of meaning attached to God's divine plan of salvation, nor to the gospel of glad tidings. They teach contradictions in the Bible which give infidelity a chance to attack the blessed word of God. Any help on this matter would be greatly appreciated. T. K. MASSIE.

Tophet, W. Va.

Friend M., your kind letter gives us additional proof, if any proof was before wanting, of the different kinds of people it takes to make up this world of ours. I have read and heard related many strange religious experiences, and many of them as honest and sincere as the one you relate; but I never before, that I can remember, heard of a person who felt that the Holy Spirit impressed him with the need of baptism, and who at the same time felt as you do, that he did not wish to unite with any body of Christian people. Since you have written so frankly to your old friend A. I. Root, I think you will have at least some confidence in his belief that Christian people ought to be banded together. The maxim, "United we stand, divided we fall," will certainly apply to the Christian religion as well as to every sort of business we find in this world of ours. In business nowadays we are told it is of the utmost importance that, no matter what a man's calling may be, he should unite with others of a like calling. A recent prominent lecturer told us that, while it was quite customary (and the fashion) a few years ago for people of the same occupation to be clashing and cutting prices, this new century seemed to be ushering in a sort of brotherhood among people of like occupations. Capitalists are uniting and forming syndicates; laboring men are uniting and forming trades unions; yes, bee-keepers are uniting in a union to protect their interests and do things that would be utterly impossible for each man fighting alone. In a like manner, *churches* are almost a necessity. How can we build comfortable places of worship, how can we send missionaries to foreign lands, how can we pay the minister, unless a lot of us unite and work as a unit? I think you are making a mistake; but, notwithstanding, if I were a minister of the gospel I think I would baptize you whether you united with my church or with no church. I hope my clerical friends will forgive me if I am not orthodox on that matter, or I fail to see why the plan is not practicable.

In regard to creeds, I have been told by members of ever so many different denominations that they could not conscientiously indorse *every* part of the creed they subscribed to; and we find great numbers of people standing outside because they can not find any church creed that exactly fits their convictions. When I united with the Congregational Church here in Medina I did not feel any promptings of the Holy Spirit toward the communion service. I talked the matter over with my pastor and the deacons of the church. They advised me to subscribe to the church creed notwithstanding, saying that, later on, I would see the value, and feel happy in being permitted to commune with my brother-Christians.* All this has come true. It is not at all likely that the creeds of the various churches are just exactly what they might be, or perhaps will be in the future. They were framed by fallible men. Notwithstanding this, I believe the Holy Spirit is leading. The various church creeds have been changed, and are being changed, as you perhaps know; and for that reason I would advise you not to put too much emphasis on your feelings in such matters—I should like to say your *notions*, for I believe that the best Christians often have peculiar notions in matters that are not particularly important.

* Dear brother, do not be in haste to call certain things, that certain Christians often do, hypocrisy. I am sure there is no hypocrisy on my part when I indorse the creed of our church without having feeling or conviction on this matter of the communion service, as I have explained to you. If each individual insists on having a creed that just suits his convictions in every respect the result must be *still more* denominations, and I am *sure* there are enough and *more* than are needed already.

WAX PROFITS.

Fig. 169.—The Root-German Steam Wax-press. Price $14.00. Shipping weight, 70 lbs.

Many bee-keepers allow old combs and scraps of beeswax to collect, which, for lack of time and the proper utensils, are scattered or eaten up by moth-worms. A big item would be added to the year's profits by the timely rendering of said wax by an economical process. We believe the press illustrated herewith fills a long-felt want in rendering wax.

B. Walker, Clyde, Ill., says:

Was inclined to believe at first that the German wax-press was a failure; but after a thorough trial I was well pleased. I secured 30 lbs. more wax from one day's use of the machine than I would have secured by the ordinary method of rendering.

N. E. France, Platteville, Wis., State Inspector of Apiaries, and General Manager National Bee-keepers' Association, says:

The German wax-press is by far the best machine or process to save wax from old black brood-combs.

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The A. I. ROOT CO., Medina, Ohio, U. S. A.

We are now paying 30c cash, 32c trade, for average wax delivered at Medina.

For 1903 You Require I Supply **PERFECT QUEENS**

Norristown, Pa., March 14, 1903.

Dear Sir.—Find inclosed $1.00 for one untested Golden queen. . . . I wish you would send a queen just like I bought of you last spring. It is one of the best and pretti st queens I ever had. At present my apiary numbers 35 colonies. Yours truly.

HENRY A. MARKLEY.

These queens are giving general satisfaction. Try some. Address

GEO. J. VANDE VORD, Daytona, Fla.

When you need Queens

and want your order filled at once with the *best* queens that money can buy, we can serve you and guarantee satisfaction. We have a fine strain of Italians that can not be excelled as honey-gatherers. We can furnish queens from either imported or home-bred mothers. Choice tested, $1.00 each. Untested, 75c; $8.00 per doz.

J. W. K. Shaw & Co., Loreauville, La.

Do You Know that you could come nearer getting what you want, and when you want it, from the New Century Queen-Rearing Co. (John W Pharr & C. B. Bankston), than anywhere in the United States? Untested, 50c.; tested 3 and 5 band, 75c; all other races, $1.00. Send for circular. **Berclair, Goliad Co., Texas.**

"Dollar Italian Queens"

Ready for delivery May 10. Send for price list.

E. E. Lawrence, : Doniphan, Missouri.

QUEENS for BUSINESS and PROFIT

These are to be had of Will Atchley. He is now prepared to fill all orders promptly, and breeds six different races in their purity. You must remember that all of the PURE Holylands that now exist in the U. S. originated from the Atchley apiaries, and they have the only imported mothers known to the United States. Untested queens from these races, 3 and 5 banded Italians. Cyprians, Albinos, Holylands, and Carniolans, bred in their purity, from 5 to 35 miles apart, February and March, $1.00 each, or $9.00 per dozen. All other months, 75c each, $4.25 for six, or $8.00 per dozen. Tested queens of either race, from $1.50 to $3.00 each. Breeders from $3.50 to $10.00 each. 1, 2, and 3 frame nuclei and bees by the pound a specialty. Prices quoted on application. Safe arrival and perfect satisfaction guaranteed. A trial order will convince you. Price list free. **WILL ATCHLEY,**

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We are now ready with as fine queens as can be reared. Untested, 75 cts.; tested, $1.00; breeder, $3.00. Nineteen years in queen-rearing. Send for my circular; it is worth $10 to you. Satisfaction guaranteed.

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